ONTARIO MINISTRY OF ENVIRONMENT
3693600024514

ONTARIO MINISTRY OF THE ENVIRONMENT

Secchi disc-chlorophyll a self-help program - 1975.

1975.

TD
222
.S43
1975
MOE

LABORATORY & RESEARCH LIBRARY
MINISTRY OF THE ENVIRONMENT

TD
222
.S43
1975

Secchi disc-chlorophyll a self help programme : 1975.

82455

Ontario

Ministry of the Environment

Allen Lake

(Dudley and Harcourt Twps., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Allen Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 22	6.3	0.9				
29	6.0	1.3				
July 6	4.8	2.7				
13	5.4	2.2				
20	4.8	2.3				
Aug. 4	5.4	2.0				
10	5.8	4.1				
17	5.4	1.8				
24	5.4	1.9				
Sept 1	6.0	1.0				
7	6.6	1.0				
21	6.0	1.0				
Mean	5.6	1.8				

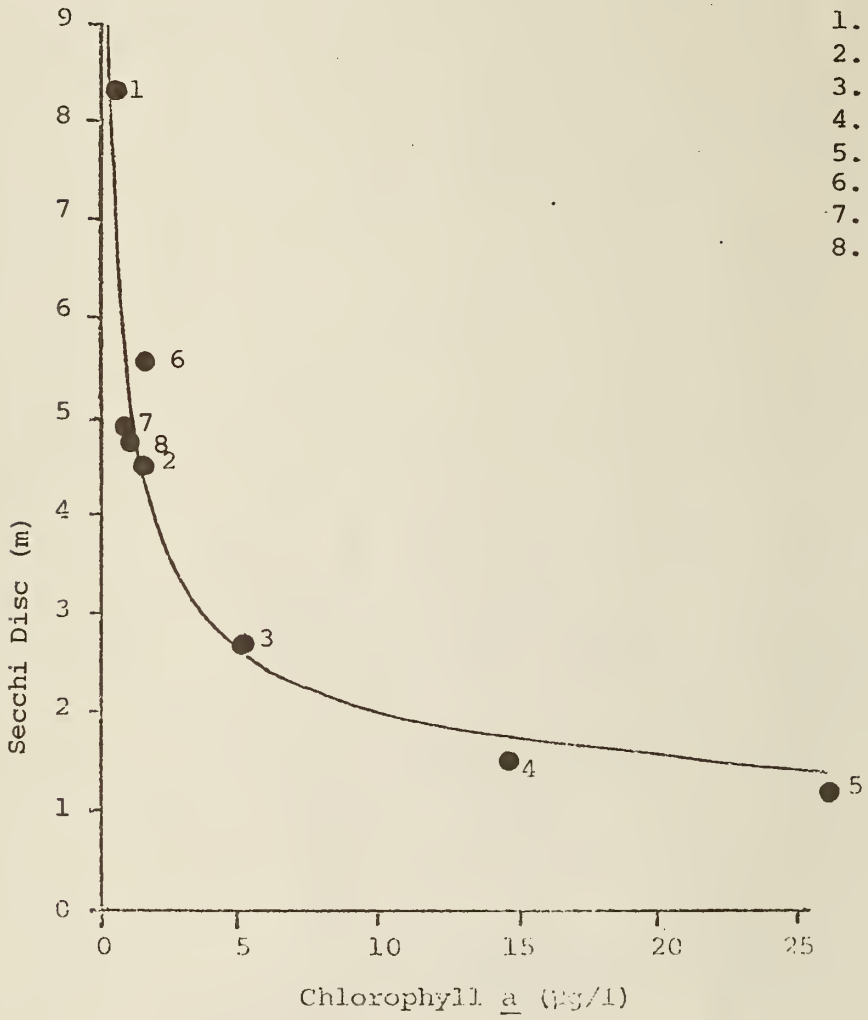
LABORATORY & RESEARCH LIBRARY
MINISTRY OF THE ENVIRONMENT
LIBRARY COPY
JUN 24 1976
MINISTRY OF THE ENVIRONMENT
LAB

Secchi disc readings for the period sampled were lowest during the months of July and August (Table 1), and chlorophyll a concentrations were generally low. The highest chlorophyll a concentration, 4.1 µg/l, occurred on August 10. Based on the seasonal averages for Secchi disc and chlorophyll a, Allen Lake would be considered unenriched, with relatively low algal densities.

TD/427.5/S43/1975/MOE AROP

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Allen Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	4.7	1.3				
1974	4.9	1.2				
1975	5.6	1.8				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Allen Lake - 1975
7. Allen Lake - 1974
8. Allen Lake - 1973

Figure 1: The relationship between Secchi disc and chlorophyll a for Allen Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Allen Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000

Att'n: Mr. F. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Dr. C. Robinson.

Ontario

Ministry of the Environment

BASS LAKE

(Oro and Orillia Twps., Simcoe County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

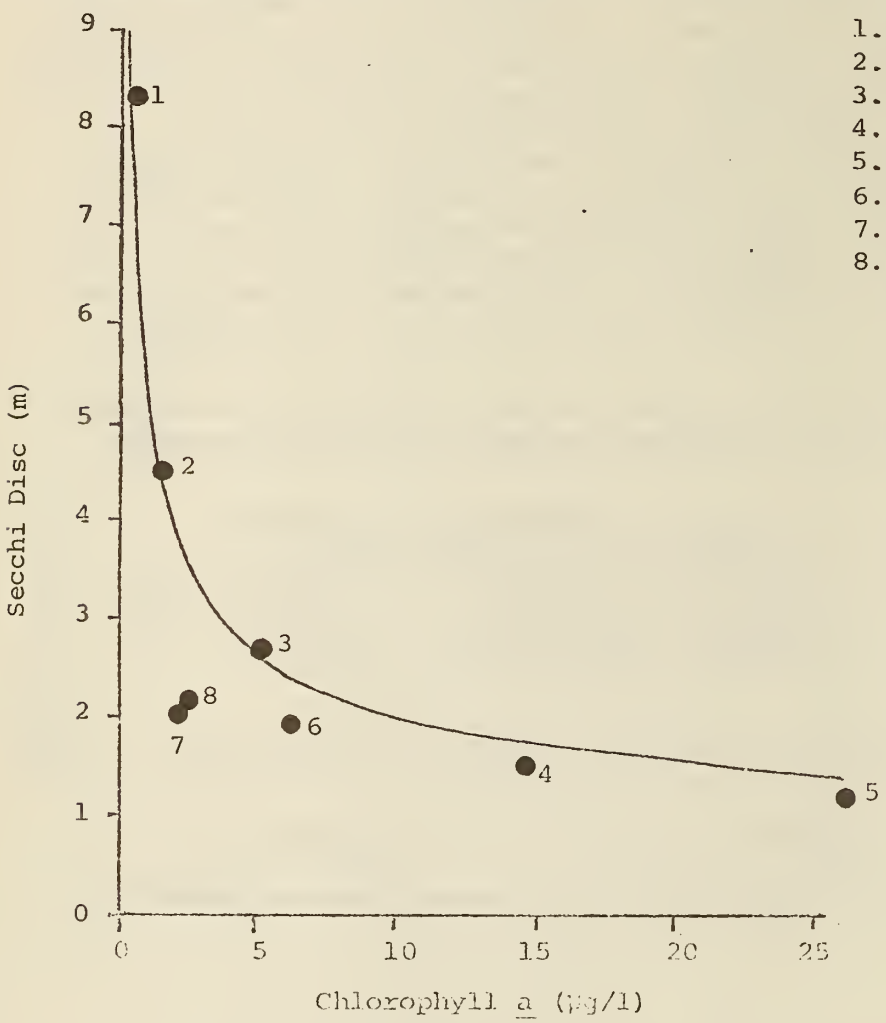
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Bass Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 1	2.1	5.6				
9	2.7	5.4				
16	2.0	4.0				
25	2.7	3.8				
July 7	2.6	3.5				
16	2.4	3.1				
21	2.2	4.9				
30	1.8	4.0				
Aug. 5	2.1	5.3				
11	1.5	5.8				
19	1.5	8.8				
28	1.2	5.8				
Sept. 3	1.2	17.0				
17	0.8	14.0				
Mean	1.9	6.5				

Secchi disc readings for the period sampled were lowest during the months of August and September (Table 1), and chlorophyll a concentrations were correspondingly high. A gradual decrease in water clarity and an increase in chlorophyll a concentrations was apparent from lake June to mid-September. Based on the seasonal averages for Secchi disc and chlorophyll a, Bass Lake would be considered enriched, with relatively high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll *a* (µg/l) data collected from Bass Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. *a*	S.D.	Chloro. *a*	S.D.	Chloro. *a*
1971						
1972						
1973	2.2	2.6				
1974	2.0	2.4				
1975	1.9	6.5				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Bass Lake - 1975
7. Bass Lake - 1974
8. Bass Lake - 1973

Figure 1: The relationship between Secchi disc and chlorophyll *a* for Bass Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there has been no significant change in Secchi disc readings (Table 2). This may be due to the shallow nature of the lake where wind-induced turbidity may influence water clarity. However, a significant increase in mean chlorophyll *a* concentration was apparent in 1975 and continued sampling will be necessary to determine if this indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shew.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Belmont Lake

(Belmont Twp., Peterborough County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

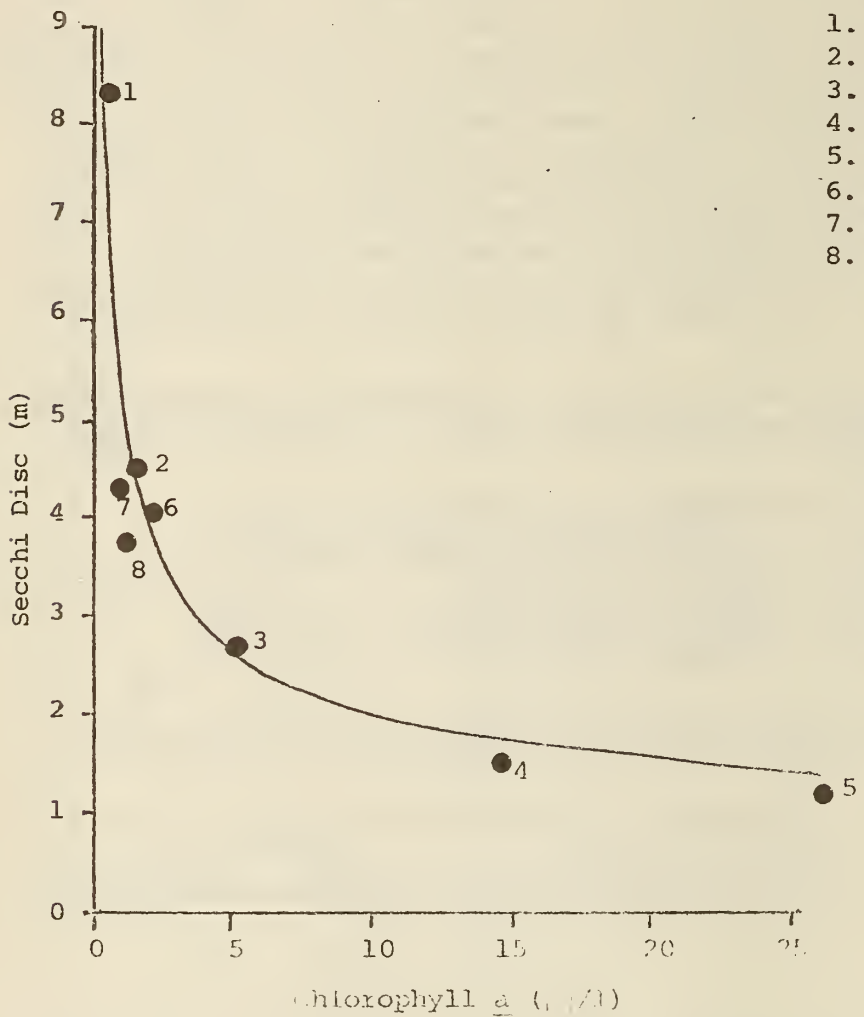
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Belmont Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 10	4.2	2.1				
22	3.2	2.8				
July 9	3.8	2.1				
15	4.0	1.1				
29	4.4	1.6				
Aug. 6	3.6	0.9				
13	5.1	1.9				
26	3.9	2.2				
Sept 2	5.4	2.0				
10	3.6	2.4				
16	3.4	2.9				
24	3.6	3.5				
Oct. 1	3.6	3.8				
7	3.9	-				
Mean	4.0	2.2				

There were very few fluctuations in Secchi disc readings for the period sampled in 1975 (Table 1); however, a distinct trend toward higher chlorophyll a concentrations was apparent from late July and early August to October. Based on seasonal averages for Secchi disc and chlorophyll a, Belmont Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Belmont Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	3.7	1.3				
1973	-	-				
1974	4.3	1.2				
1975	4.0	2.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Belmont Lake - 1975
7. Belmont Lake - 1974
8. Belmont Lake - 1972

Figure 1: The relationship between Secchi disc and chlorophyll a for Belmont Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there has been no significant change in Secchi disc readings (Table 2). However, a slight increase in mean chlorophyll a concentration was apparent in 1975 and continued sampling will be necessary to determine if this indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

BIG BARNUM LAKE

(Dysart Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

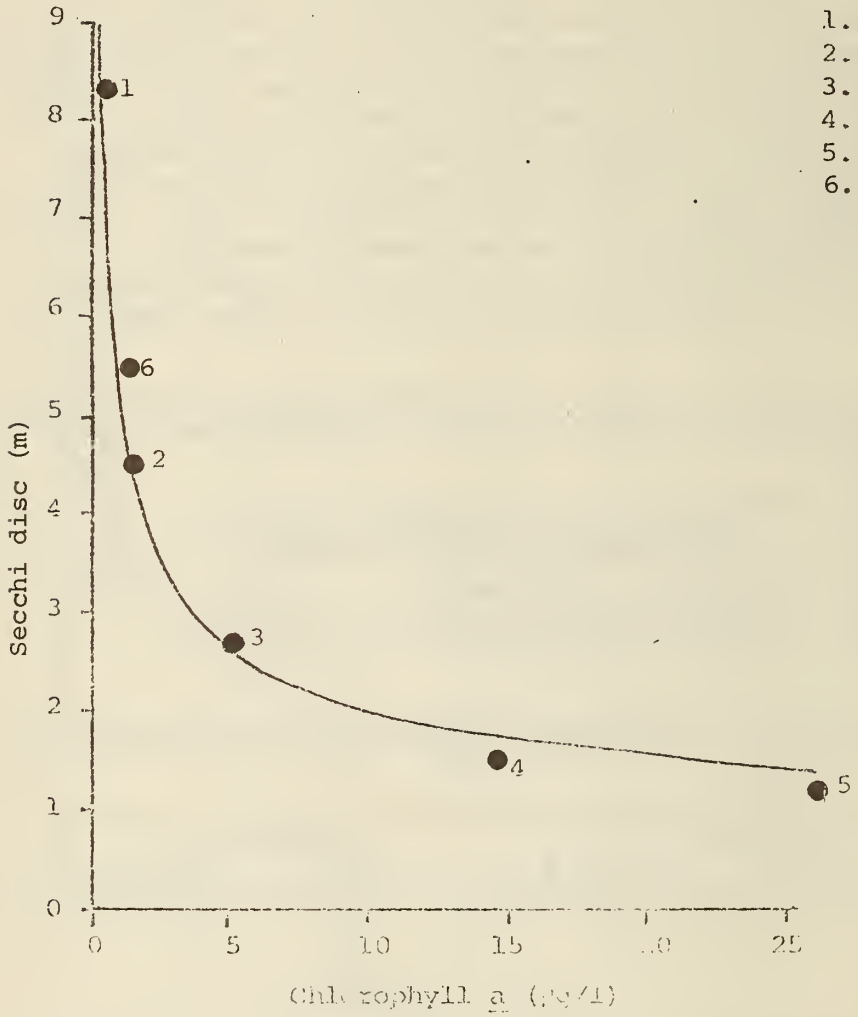
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Big Barnum Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 1	6.4	1.9				
6	6.8	2.0				
13	6.9	2.1				
20	6.3	1.5				
Aug. 3	4.5	-				
10	5.4	1.3				
17	5.6	1.5				
Sept.1	4.5	1.5				
7	4.6	0.9				
14	4.6	1.7				
21	5.0	1.4				
28	5.1	1.5				

Secchi disc readings were highest during the month of July and lowest in early September, whereas, there were no significant fluctuations or trends in chlorophyll a concentration throughout the period sampled. Based on seasonal averages for Secchi disc and chlorophyll a, Big Barnum Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/l) data collected from Big Barnum Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	5.5	1.6				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Big Barnum Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Big Barnum Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Big Barnum Lake was positioned in the upper portion of the curve in Figure 1, where it was far removed from the highly productive waters of the Bay of Quinte and Moira Lake. Since no historical Secchi disc or chlorophyll a data (Table 2) is available for Big Barnum Lake, it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity and algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
[illegible] Grand Drive,
Don Mills, Ontario,
[illegible]

[illegible]

Attn: Mr. R. Shaw.

Ontario Ministry of the Environment,
Water Resources Branch,
Box [illegible],
Rexdale, Ontario,
M9W 5L1

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

BIG HAWK LAKE

(Stanhope Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

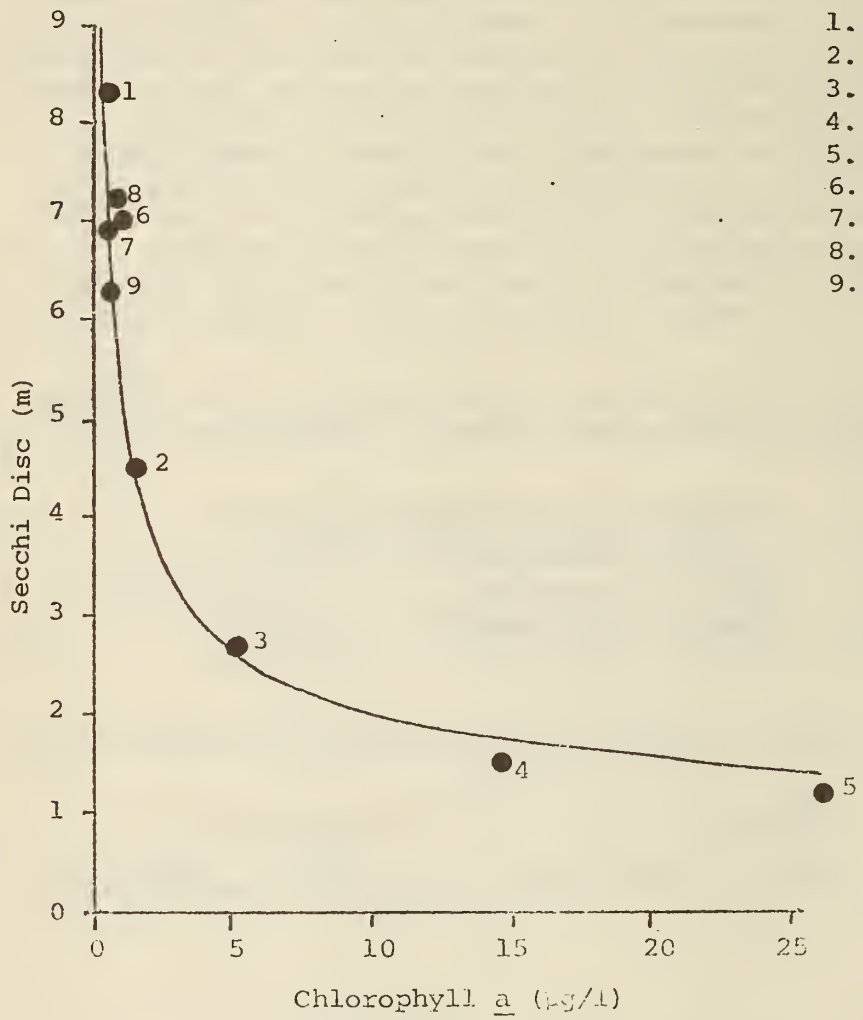
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Big Hawk Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	6.2	1.0				
25	6.0	0.5				
June 1	6.8	0.8				
8	7.8	1.8				
15	6.3	0.9				
22	7.5	0.1				
July 6	7.4	0.8				
13	6.8	3.4				
20	6.4	1.0				
Aug. 4	7.5	1.0				
11	7.4	0.8				
17	6.9	1.1				
24	7.2	1.9				
Sept. 14	8.4	2.5				
Mean	7.0	1.2				

Secchi disc readings for the period sampled were lowest in late May (Table 1), and chlorophyll a concentrations were generally low. The highest chlorophyll a concentration , 3.4 µg/l, occurred on July 13. Based on the seasonal averages for Secchi disc and chlorophyll a, Big Hawk Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Big Hawk Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	6.3	0.8				
1973	7.2	1.0				
1974	6.9	0.7				
1975	7.0	1.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Big Hawk Lake - 1975
7. Big Hawk Lake - 1974
8. Big Hawk Lake - 1973
9. Big Hawk Lake - 1972

Figure 1: The relationship between Secchi disc and chlorophyll a for Big Hawk Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Big Hawk Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

BIG STRAGGLE LAKE

(Harcourt Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

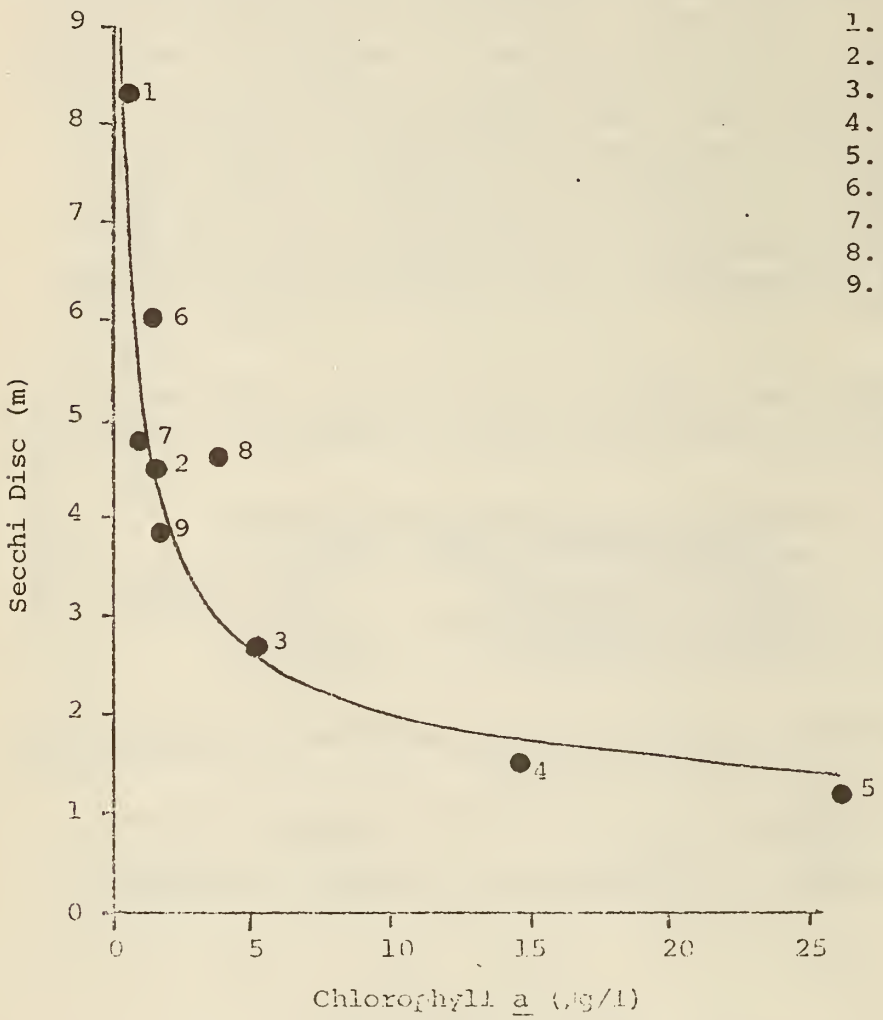
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Big Straggle Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 1	4.6	2.2				
6	5.2	2.7				
13	5.6	2.2				
20	5.6	1.3				
27	4.6	1.8				
Aug. 4	5.6	1.5				
10	5.8	1.5				
17	6.8	1.8				
24	6.4	1.6				
Sept. 1	6.2	1.4				
7	7.0	1.3				
14	6.2	1.6				
21	6.8	1.4				
28	7.0	1.9				
Mean	6.0	1.7				

Secchi disc readings for the period sampled were lowest in early July. At the same time, the highest chlorophyll a concentrations were recorded. Based on the seasonal averages for Secchi disc and chlorophyll a, Big Straggle Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Big Straggle from 1971 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971	3.8	2.1				
1972	-	-				
1973	4.6	4.0				
1974	4.8	1.4				
1975	6.0	1.7				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Big Straggle Lake - 1975
7. Big Staggle Lake - 1974
8. Big Straggle Lake - 1973
9. Big Straggle Lake - 1971

Figure 1: The relationship between Secchi disc and chlorophyll a for Big Straggle Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past five years there has been a trend towards improved Secchi disc readings (Table 2), but, apart from the slightly elevated levels recorded in 1973, chlorophyll a concentrations have remained relatively stable. Additional sampling will be necessary to see if these conditions continue.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Attn: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-249-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

BILLINGS LAKE

(Glamorgan Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

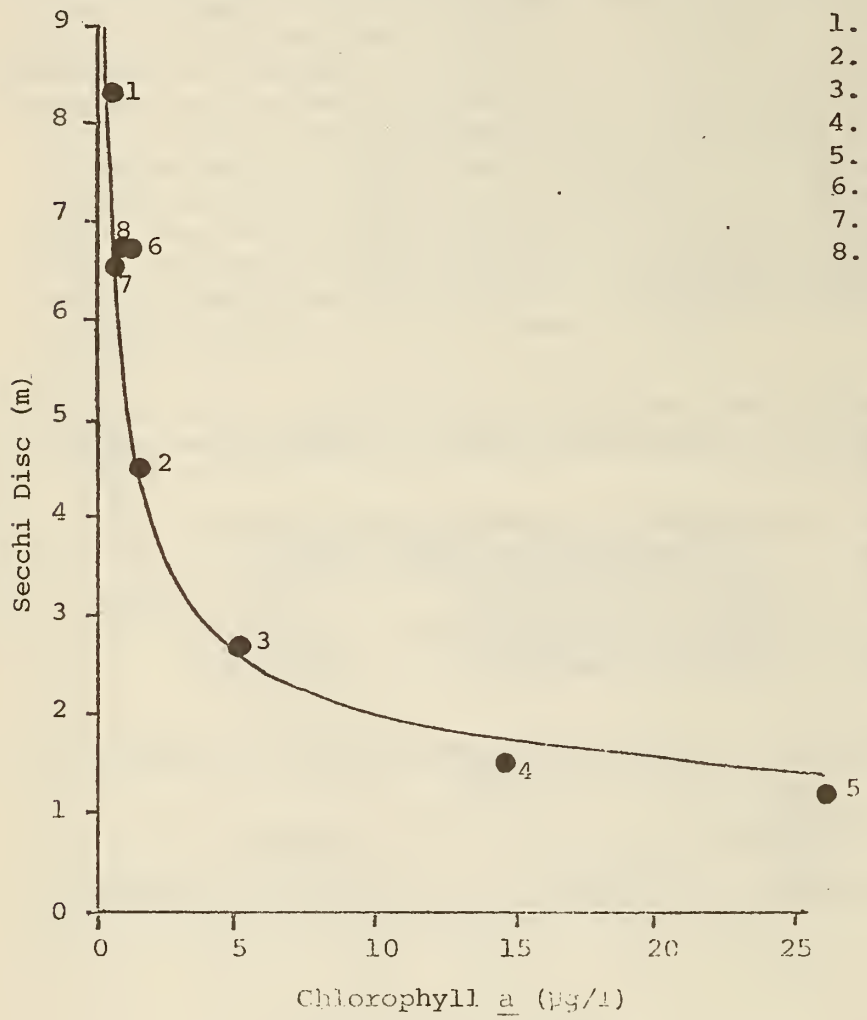
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Billings Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 25	5.7	0.8				
June 8	6.0	1.8				
15	5.4	1.3				
22	5.1	1.6				
29	5.8	0.9				
July 6	6.2	0.9				
13	7.5	0.6				
20	8.1	0.4				
Aug. 4	7.8	1.1				
10	7.4	0.8				
17	6.8	1.0				
24	7.0	0.9				
Sept. 7	6.8	1.1				
14	7.2	3.3				
28	7.4	1.0				
Mean	6.7	1.2				

Secchi disc readings for the period sampled were lowest late May and throughout the month of June (Table 1), and chlorophyll a concentrations were generally low. The highest chlorophyll a concentration, 3.3 µg/l, occurred on September 14. Based on the seasonal averages for Secchi disc and chlorophyll a, Billings Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Billings Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	6.7	1.0				
1974	6.5	0.7				
1975	6.7	1.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Billings Lake - 1975
7. Billings Lake - 1974
8. Billings Lake - 1973

Figure 1: The relationship between Secchi disc and chlorophyll a for Billings Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Billings Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Black Lake

(Lutterworth Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

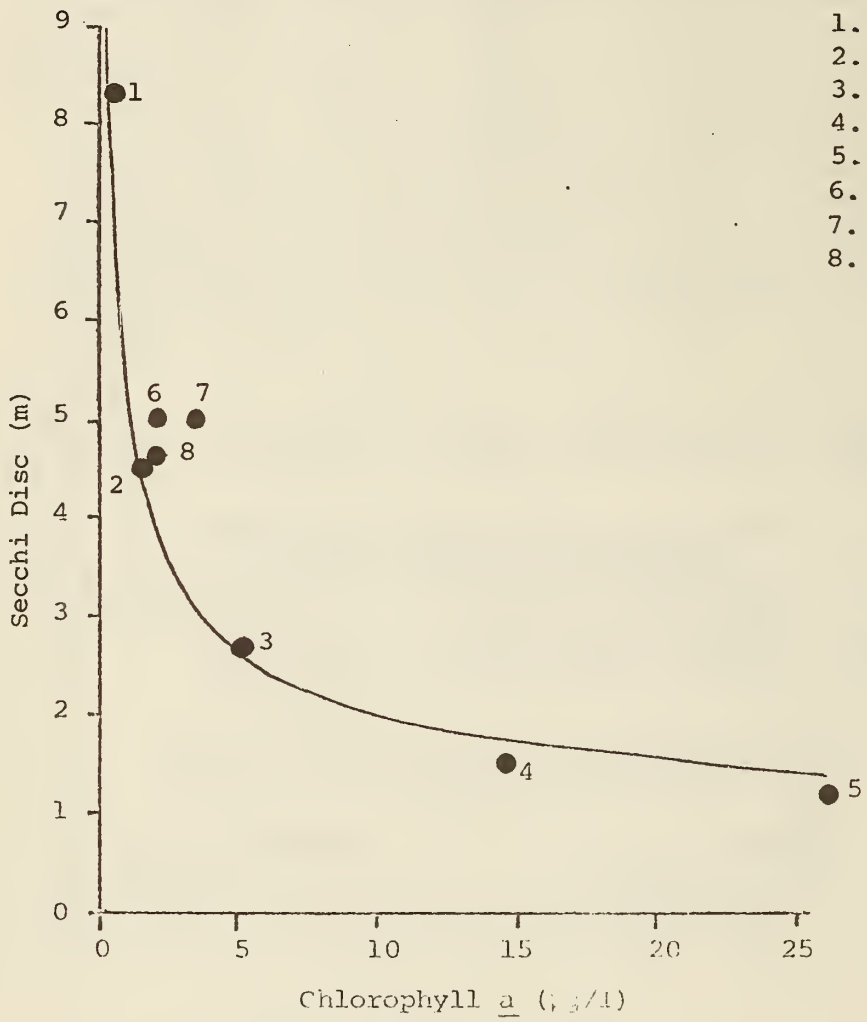
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 6	5.0	2.2				
20	5.4	1.9				
Aug. 4	5.1	3.7				
15	4.2	2.3				
31	5.1	1.4				
Mean	5.0	2.3				

Generally, Secchi disc readings for the period sampled were relatively uniform (Table 1), but chlorophyll a concentrations tended to fluctuate slightly. However, it must be realized that the samples only covered a two month period and they were collected on a bi-weekly basis. Without spring or fall data it is difficult to estimate the trophic status of the lake. Based on the average values for Secchi disc and chlorophyll a which are available, Black Lake would be considered relatively unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	4.6	2.3				
1974	5.0	3.7				
1975	5.0	2.3				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Black Lake - 1975
7. Black Lake - 1974
8. Black Lake - 1973

Figure 1: The relationship between Secchi disc and chlorophyll a for Black Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Black Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

Black Lake

(Lutterworth Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

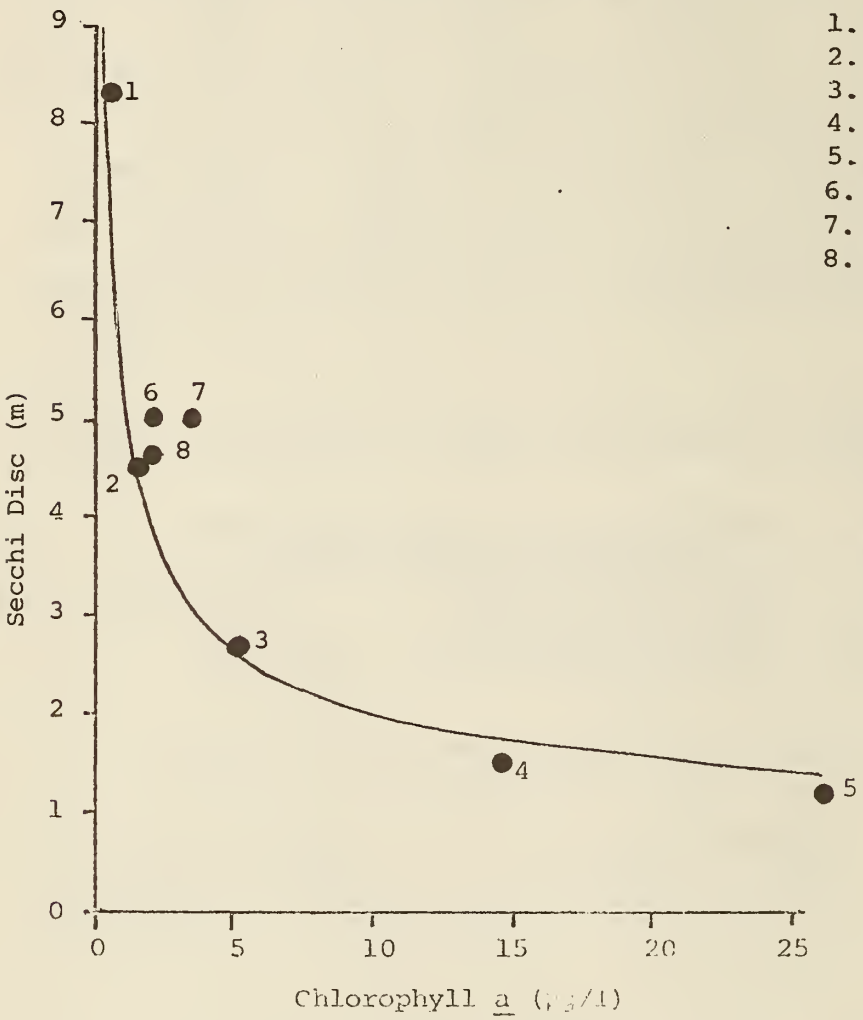
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 6	5.0	2.2				
20	5.4	1.9				
Aug. 4	5.1	3.7				
15	4.2	2.3				
31	5.1	1.4				
Mean	5.0	2.3				

Generally, Secchi disc readings for the period sampled were relatively uniform (Table 1), but chlorophyll a concentrations tended to fluctuate slightly. However, it must be realized that the samples only covered a two month period and they were collected on a bi-weekly basis. Without spring or fall data it is difficult to estimate the trophic status of the lake. Based on the average values for Secchi disc and chlorophyll a which are available, Black Lake would be considered relatively unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	4.6	2.3				
1974	5.0	3.7				
1975	5.0	2.3				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Black Lake - 1975
7. Black Lake - 1974
8. Black Lake - 1973

Figure 1: The relationship between Secchi disc and chlorophyll a for Black Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Black Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

Black Lake

(Wood Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake in 1975.

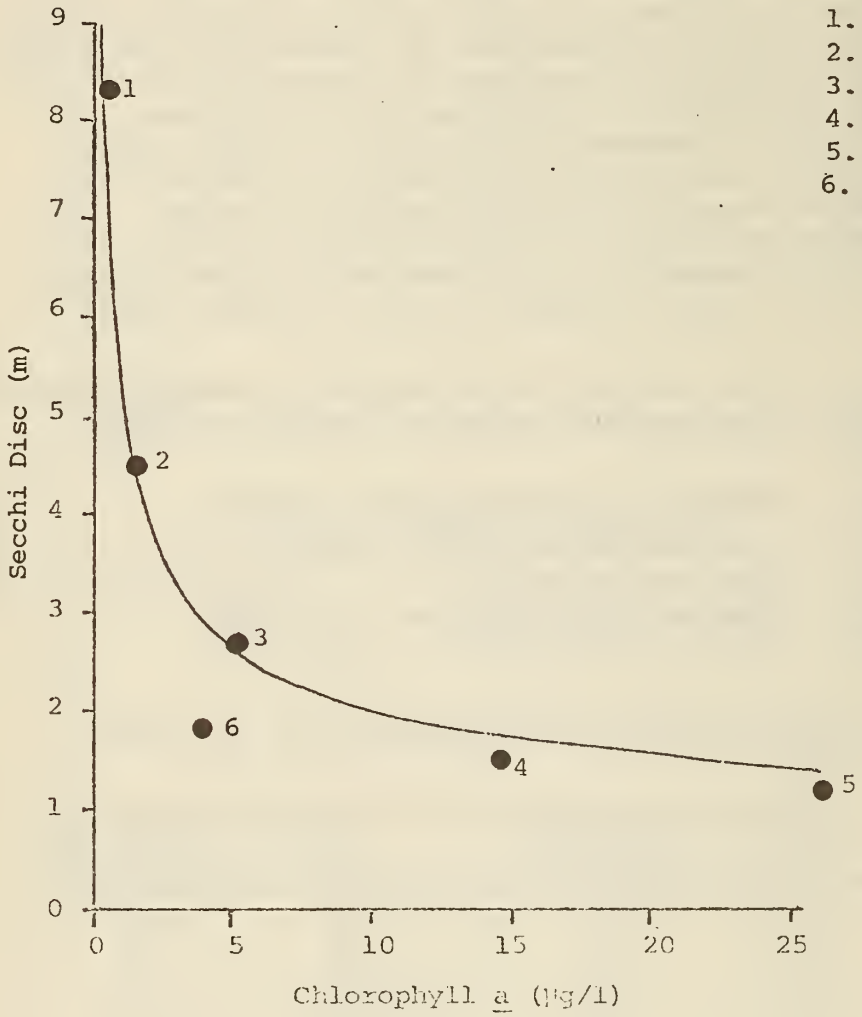
Date	Station - Main		Station - North Bay		Station - South Bay	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 24	1.9	3.5	1.8	3.8	1.9	3.5
July 6	1.5	3.2	1.5	3.2	1.5	3.5
18	1.5	3.8	1.8	3.7	1.5	3.3
Aug. 5	2.0	3.5	2.0	4.2	2.0	3.0
18	2.0	4.8	2.0	5.5	1.8	5.4
Sept 8	-	-	-	-	2.0	6.0
Mean	1.8	3.8	1.8	4.1	1.8	4.1

Identical mean Secchi disc readings were calculated for the three stations on Black Lake (Table 1), and the chlorophyll a concentrations measured were also similar. Secchi disc readings did not vary significantly during the period sampled; however, there seemed to be a trend towards increasing chlorophyll a levels in late August and early September. It is unfortunate that the sampling was not carried further into the fall.

Since Black Lake is a coloured water lake, it cannot be classified as to status of enrichment by the system outlined above.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Black Lake in 1975.

Year	Station - Main		Station - North Bay		Station - South Bay	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	1.8	3.8	1.8	4.1	1.8	4.1
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Black Lake* - 1975

*Mean of three stations

Figure 1: The relationship between Secchi disc and chlorophyll a for Black Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Black Lake would be positioned considerably below the established curve because of the reduction in water clarity by the coloured water (Figure 1); however, the inclusion of Black Lake on the graph for comparative purposes is not justified. No historical Secchi disc or chlorophyll a information is available for Black Lake (Table 2).

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

BOB LAKE

(Anson Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Bob Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 1	4.5	6.2				
15	6.0	2.4				
30	5.1	1.1				
July 13	6.0	2.0				
Mean	5.4	2.9				

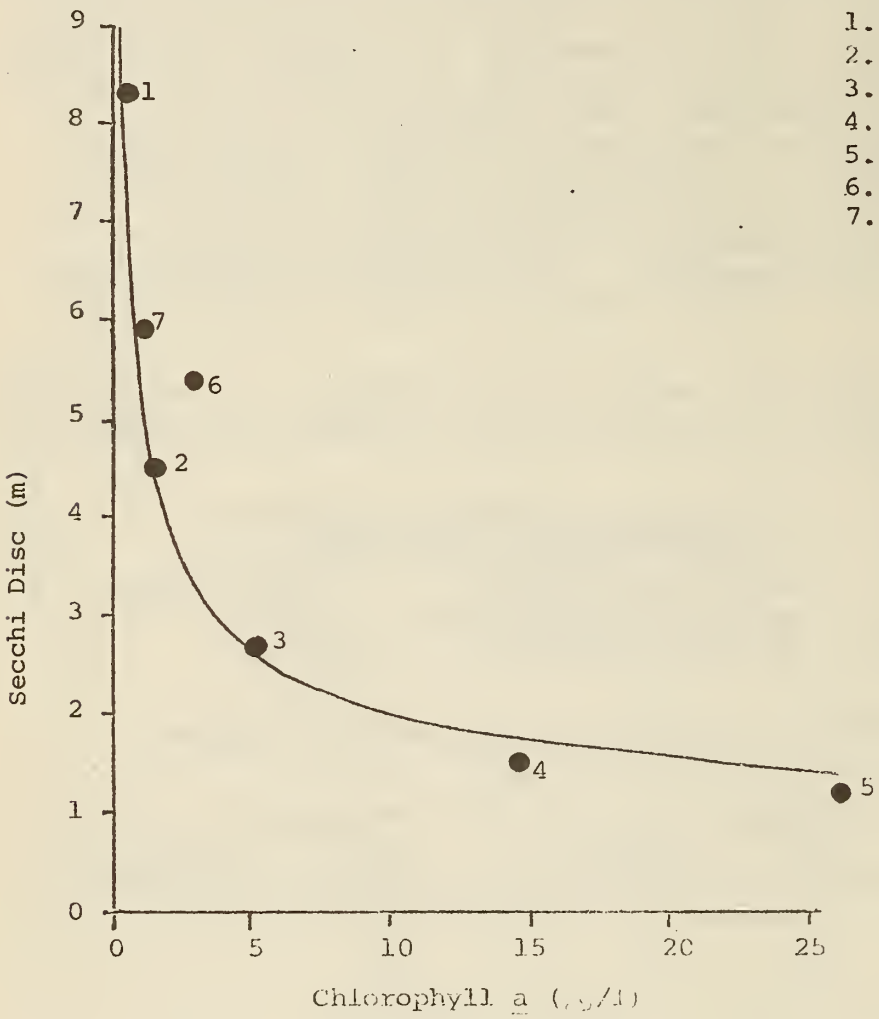
Since samples were collected on only four occasions in 1975 it is difficult to obtain even a reasonably accurate estimate of the trophic status of Bob Lake.

The lowest Secchi disc reading observed was 4.5 m on June 1 (Table 1), and at the same time the chlorophyll a concentration was correspondingly highest. Based on the average Secchi disc and chlorophyll a values which are available, Bob Lake would be considered unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Bob Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972 **	5.9	1.2				
1973 *	5.2	2.4				
1974 *	4.8	1.9				
1975	5.4	2.9				

** from Dillon, 1974
* based on one set of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Bob Lake - 1975
7. Bob Lake - 1972

Figure 1: The relationship between Secchi disc and chlorophyll a for Bob Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Again, it must be emphasized that only limited data is available, but it would appear that no significant changes in Secchi disc readings or chlorophyll a concentrations have occurred in Bob Lake over the past four years (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

BOSHKUNG LAKE

(Stanhope Twp.,Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

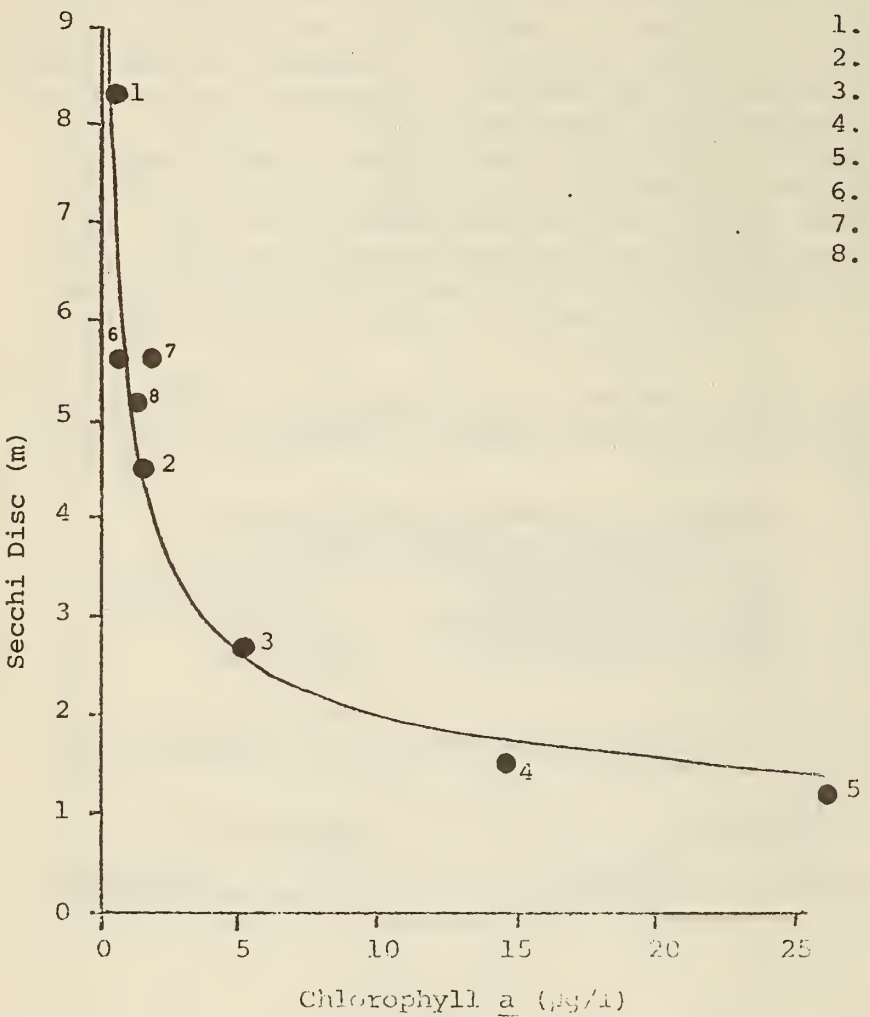
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Boshkung Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	5.1	2.8				
June 22	-	0.8				
July 6	-	2.3				
20	-	1.5				
Aug. 4	5.4	1.0				
17	5.1	0.8				
Sept. 1	5.1	0.8				
Mean	5.2	1.4				

Secchi disc readings for the period sampled, although not available in the early summer, were relatively uniform in 1975 (Table 1). Chlorophyll a concentrations ranged from 0.8 to 2.8 µg/l with the highest values generally observed in the early part of the season and the lower values in August and September. Based on the seasonal averages for Secchi disc and chlorophyll a Boshkung Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Boshkung Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	5.6	0.9				
1973	5.6	2.0				
1974	-	0.9				
1975	5.2	1.4				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Boshkung Lake - 1972
7. Boshkung Lake - 1973
8. Boshkung Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Boshkung Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Boshkung Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Canning Lake

(Minden & Snowden Twps., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

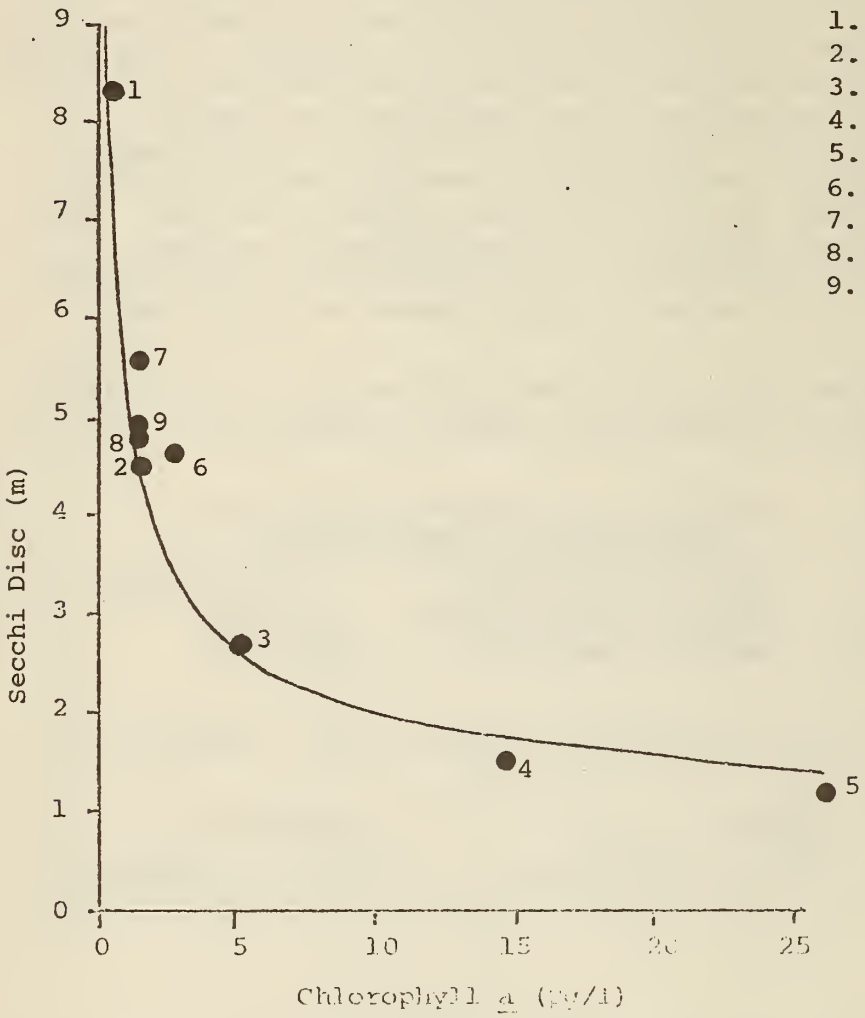
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Canning Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 18	3.3	1.3				
25	4.5	0.9				
June 1	5.4	0.5				
8	4.8	0.9				
15	5.4	2.2				
22	4.5	2.5				
July 6	4.5	3.0				
13	4.2	2.5				
20	4.2	1.3				
27	4.5	1.1				
Aug. 4	5.7	1.5				
10	5.7	1.5				
17	5.4	1.9				
24	5.1	0.9				
Sept. 7	5.7	1.9				

Secchi disc readings for the period sampled were lowest in mid-May (Table 1), and chlorophyll a concentrations were generally low. The highest chlorophyll a concentrations occurred in late June and early July. Based on the seasonal averages for Secchi disc and chlorophyll a, Canning Lake would be considered moderately enriched with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Canning Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	4.6	3.0				
1973	5.6	1.8				
1974	4.8	1.6				
1975	4.9	1.6				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Canning Lake - 1972
7. Canning Lake - 1973
8. Canning Lake - 1974
9. Canning Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Canning Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Canning Lake (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
P.O. 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Chandos Lake

(Chandos Twp., Peterborough County)

Ontario

Ministry of the Environment

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Chandos Lake in 1975.

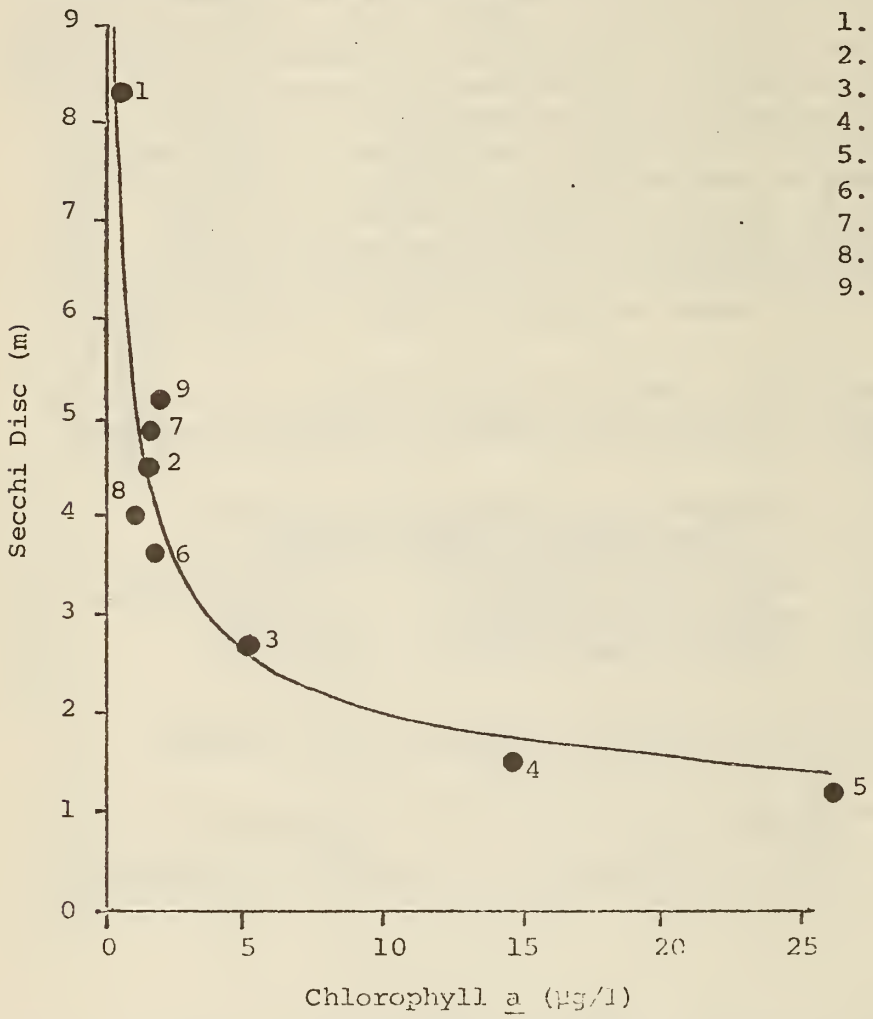
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 1	5.2	2.3				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Chandos Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972 *	3.6	2.2				
1973 **	4.9	1.7				
1974 *	4.0	1.2				
1975 ***	5.2	2.3				

* mean of four stations
** mean of three stations
*** based on one set of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Chandos Lake - 1972*
7. Chandos Lake - 1973**
8. Chandos Lake - 1974*
9. Chandos Lake - 1975***

Figure 1: The relationship between Secchi disc and chlorophyll a for Chandos Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of the Chandos Lake information for 1975 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1975 position has been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

CLEARWATER LAKE

(Morrison Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

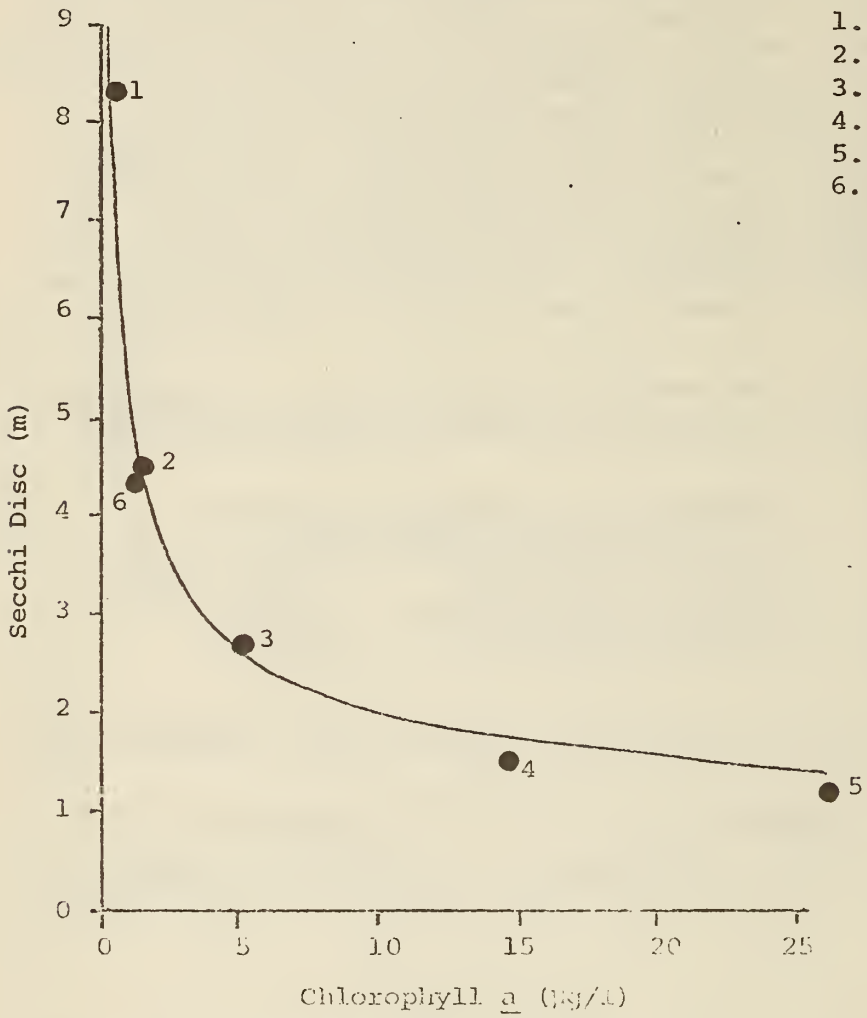
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Clearwater Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
Aug. 15	4.5	1.7				
18	4.5	1.5				
Sept. 13	4.5	1.1				
16	5.0	1.1				
Oct. 25	3.0	1.8				
27	4.5	1.7				
Mean	4.3	1.5				

With the exception of the 3.0 m reading on October 25, Secchi disc values were generally uniform in 1975 (Table 1). Chlorophyll a concentrations were also relatively stable during the period sampled. Based on the seasonal averages for Secchi disc and chlorophyll a, Clearwater Lake would be considered moderately enriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Clearwater Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	4.3	1.5				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Clearwater Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Clearwater Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Clearwater Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for Clearwater Lake, it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Davis Lake

(Lutterworth Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

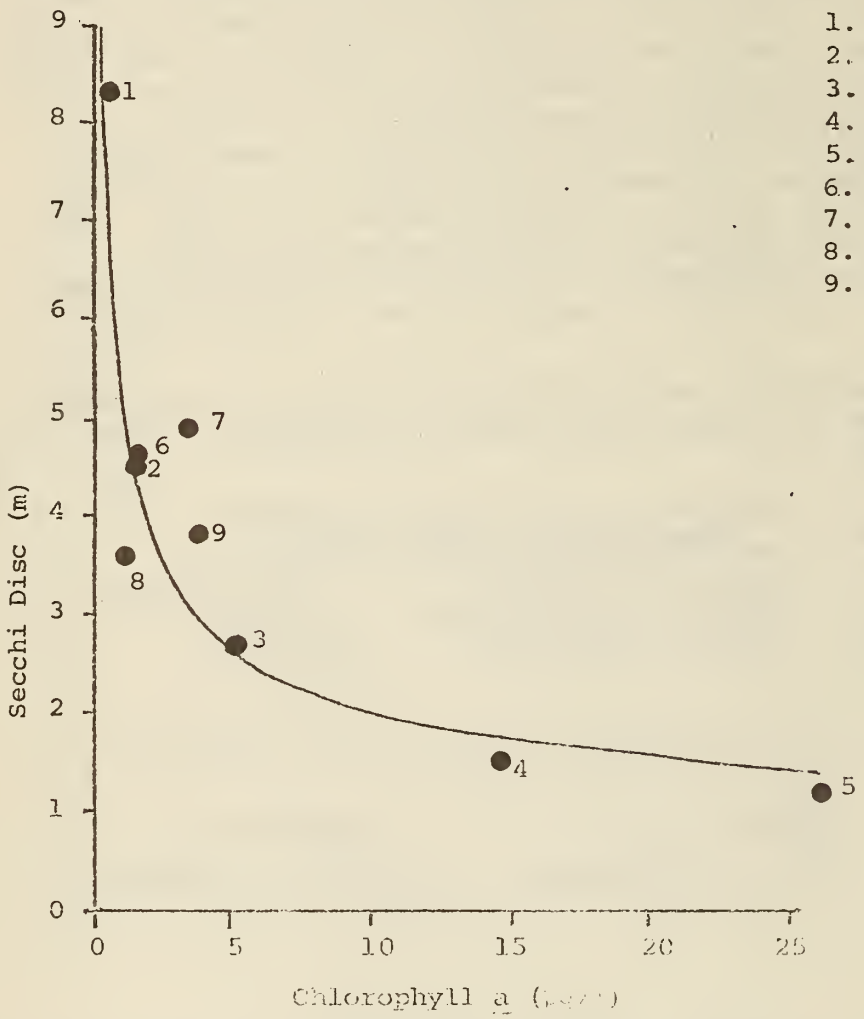
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Davis Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	1.9	2.3				
25	3.0	1.6				
June 1	3.4	3.6				
8	3.6	6.1				
15	4.0	3.8				
23	3.3	4.6				
30	4.4	2.5				
July 7	4.4	6.0				
13	4.0	5.3				
20	4.6	4.5				
27	4.0	3.8				
Aug. 4	3.8	3.9				
10	3.4	2.1				
17	4.0	5.2				
24	4.4	3.5				
Sept. 1	4.6	3.5				

Secchi disc readings for the period sampled were lowest in May (Table 1). Chlorophyll a concentrations tended to fluctuate considerably with the highest levels recorded in early June and early July. Based on the seasonal averages for Secchi disc and chlorophyll a, Davis Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Davis Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	4.6	1.9				
1973	4.9	3.7				
1974	3.6	1.4				
1975	3.8	3.9				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Davis Lake - 1972
7. Davis Lake - 1973
8. Davis Lake - 1974
9. Davis Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Davis Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there has been a slight decrease in mean Secchi disc readings, but mean chlorophyll a concentrations have not indicated any consistent trends (Table 2, Figure 1). Continued sampling will be necessary to determine if the decrease in water clarity is significant.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000

Att'n: Mr. R. Shaw

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

DRAG LAKE

(DUDLEY & DYSART TOWNSHIPS, HALIBURTON COUNTY)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

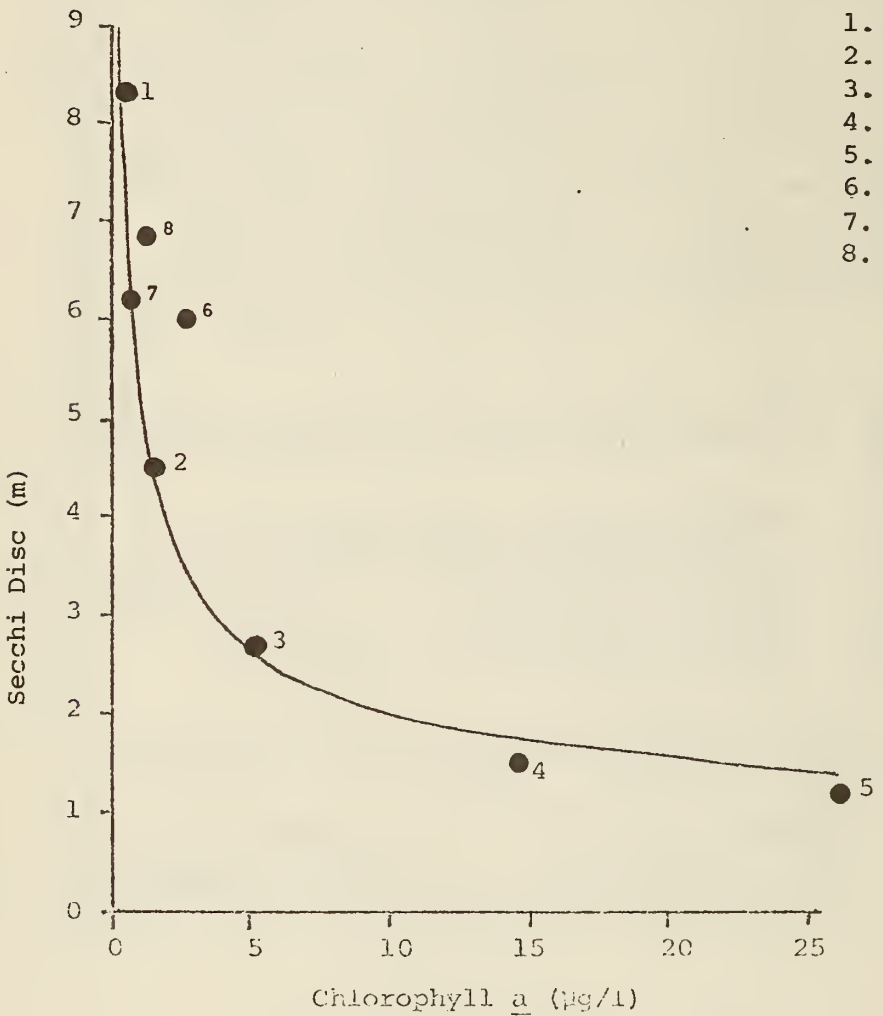
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Drag Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 6	7.2	1.5				
Aug. 4	5.7	2.2				
10	6.9	1.6				
24	6.9	0.9				
Sept. 1	7.2	0.7				
Mean	6.8	1.4				

In general, water clarity in Drag Lake was excellent and chlorophyll a concentrations were low during the period sampled. The lowest Secchi disc reading recorded was 5.7 m on August 4 (Table 1), and at the same time the chlorophyll a concentration was correspondingly highest. Based on the seasonal averages for Secchi disc and chlorophyll a, Drag Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Drag Lake from 1973 to 1975.

Year	Station - Main S.D.	Chloro. a	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a
1971						
1972						
1973	6.0	2.9				
1974	6.2	0.6				
1975	6.8	1.4				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Drag Lake - 1973
7. Drag Lake - 1974
8. Drag Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Drag Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Drag Lake (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Bo. 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

EAGLE LAKE

(Harburn Township, Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Eagle Lake in 1975.

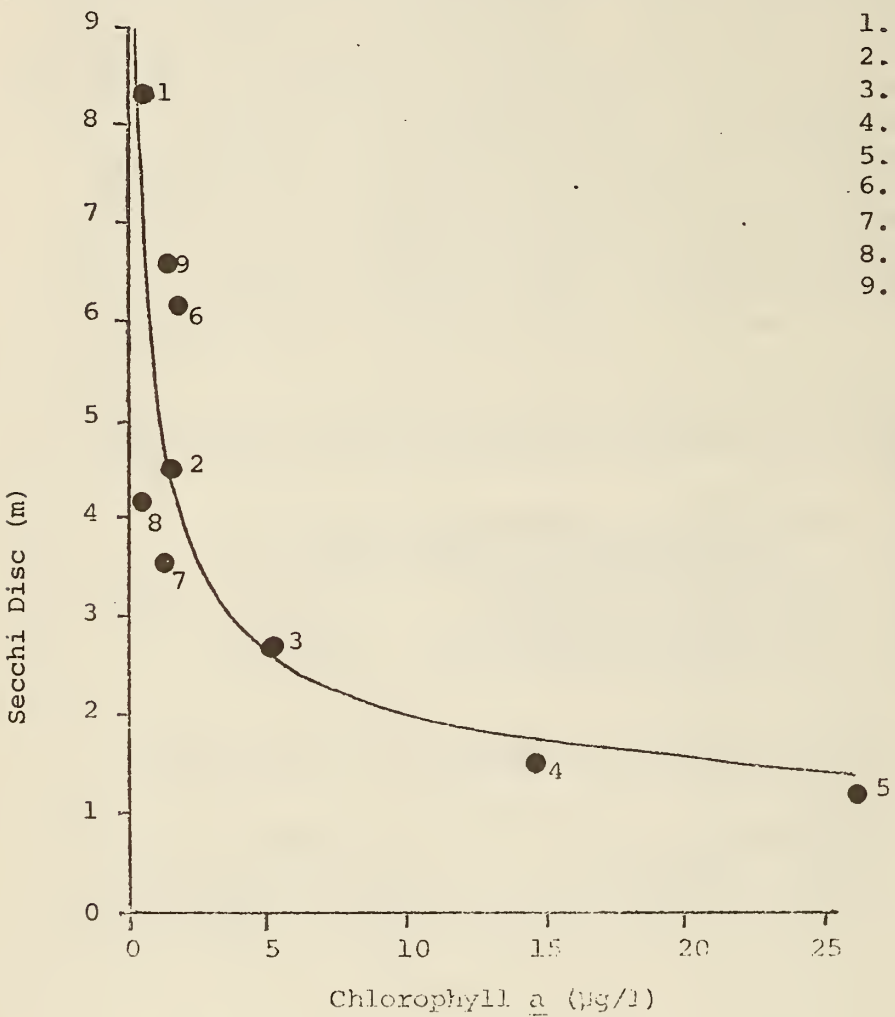
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 28	5.1	0.5				
June 1	6.9	1.2				
8	7.8	1.6				
15	7.6	2.3				
22	8.4	-				
July 6	5.4	2.5				
Aug.17	5.1	1.4				
Mean	6.6	1.6				

Secchi disc readings for the period sampled tended to vary considerably from week to week with the lowest values recorded in late May and in mid-summer. Chlorophyll a concentrations were generally low throughout the season. Based on the yearly average for Secchi disc and chlorophyll a, Eagle Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Eagle Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972*	6.2	1.8				
1973	3.6	1.5				
1974	4.2	0.5				
1975	6.6	1.6				
..						
..						
..						

* from Dillon, 1974



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Eagle Lake - 1972
7. Eagle Lake - 1973
8. Eagle Lake - 1974
9. Eagle Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Eagle Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years mean Secchi disc values have fluctuated considerably, whereas mean chlorophyll a concentrations have not varied appreciably (Table 2, Figure 1). Continued sampling will be necessary to determine if the poorer water clarity readings measured in 1973 and 1974 are significant.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-4058

Mr. C. Robinson.

Ontario

Ministry of the Environment

EAGLE LAKE

(Harburn Township, Haliburton County

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Eagle Lake in 1975.

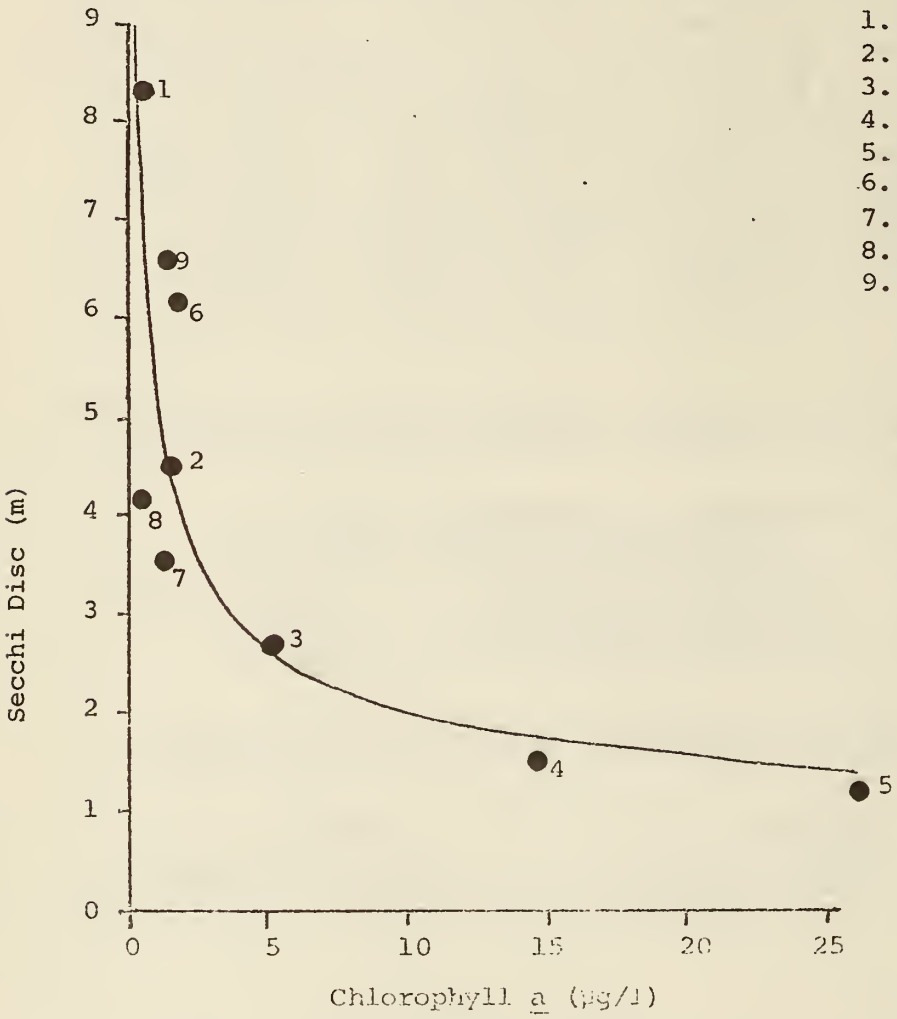
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 28	5.1	0.5				
June 1	6.9	1.2				
8	7.8	1.6				
15	7.6	2.3				
22	8.4	-				
July 6	5.4	2.5				
Aug.17	5.1	1.4				
Mean	6.6	1.6				

Secchi disc readings for the period sampled tended to vary considerably from week to week with the lowest values recorded in late May and in mid-summer. Chlorophyll a concentrations were generally low throughout the season. Based on the yearly average for Secchi disc and chlorophyll a, Eagle Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Eagle Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972*	6.2	1.8				
1973	3.6	1.5				
1974	4.2	0.5				
1975	6.6	1.6				
..						
..						
..						

* from Dillon, 1974



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Eagle Lake - 1972
7. Eagle Lake - 1973
8. Eagle Lake - 1974
9. Eagle Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Eagle Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years mean Secchi disc values have fluctuated considerably, whereas mean chlorophyll a concentrations have not varied appreciably (Table 2, Figure 1). Continued sampling will be necessary to determine if the poorer water clarity readings measured in 1973 and 1974 are significant.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

EAST LAKE

(Harburn Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

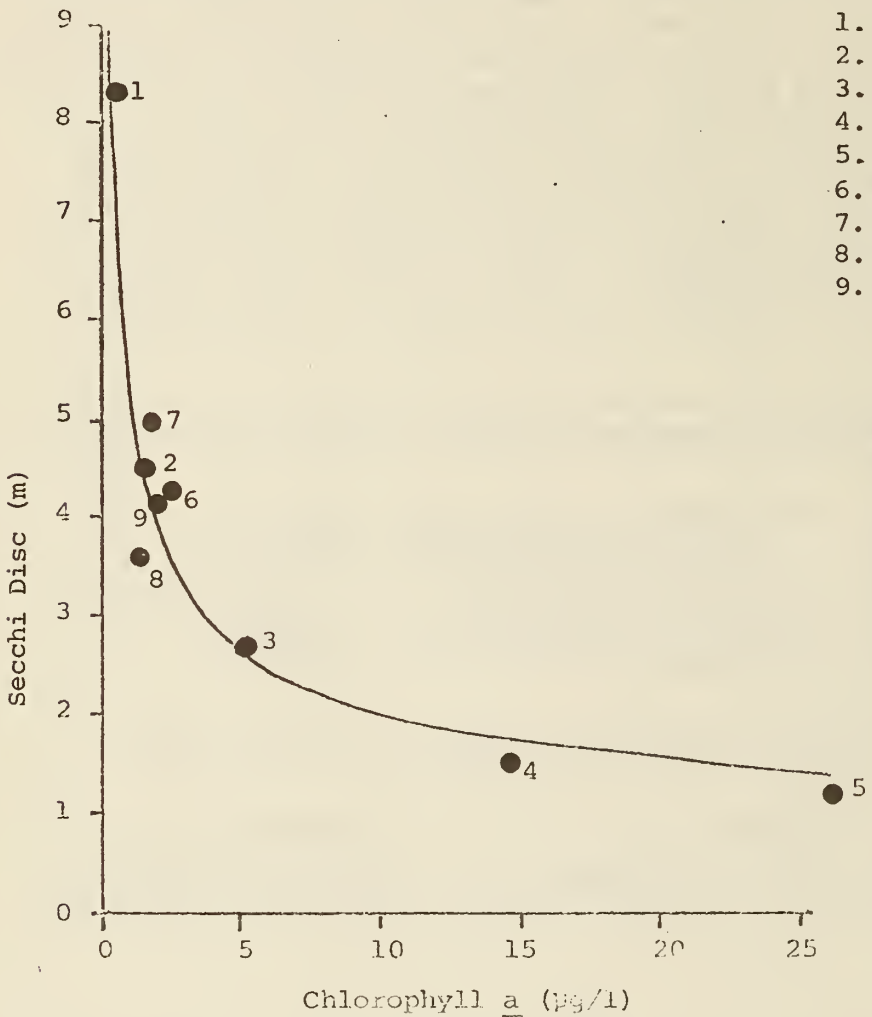
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from East Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 30	3.8	2.6				
July 13	3.8	2.4				
20	3.0	2.0				
27	3.4	1.5				
Aug. 3	4.5	-				
10	5.3	2.6				
17	5.5	2.8				
24	5.5	2.1				
Sept. 1	3.0	1.7				
13	4.5	2.0				
Mean	4.2	2.2				

Secchi disc readings for the period sampled were lowest in early summer, increased to a maximum of 5.5 m in mid-summer and began to decrease again in September. Chlorophyll a concentrations did not vary significantly throughout the season. The highest value recorded was 2.8 µg/l - August 17. Based on the seasonal averages for Secchi disc and chlorophyll a, East Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from East Lake from 1971 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971	4.3	2.7				
1972						
1973	5.0	1.9				
1974	3.6	1.5				
1975	4.2	2.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. East Lake - 1971
7. East Lake - 1973
8. East Lake - 1974
9. East Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for East Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past five years mean Secchi disc values have fluctuated considerably, whereas mean chlorophyll a concentrations have not varied appreciably (Table 2, Figure 1). Continued sampling will be necessary to determine if the poorer water clarity readings are significant.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

FAIRY LAKE
(Chaffey & Brunel Townships, Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Fairy Lake in 1975.

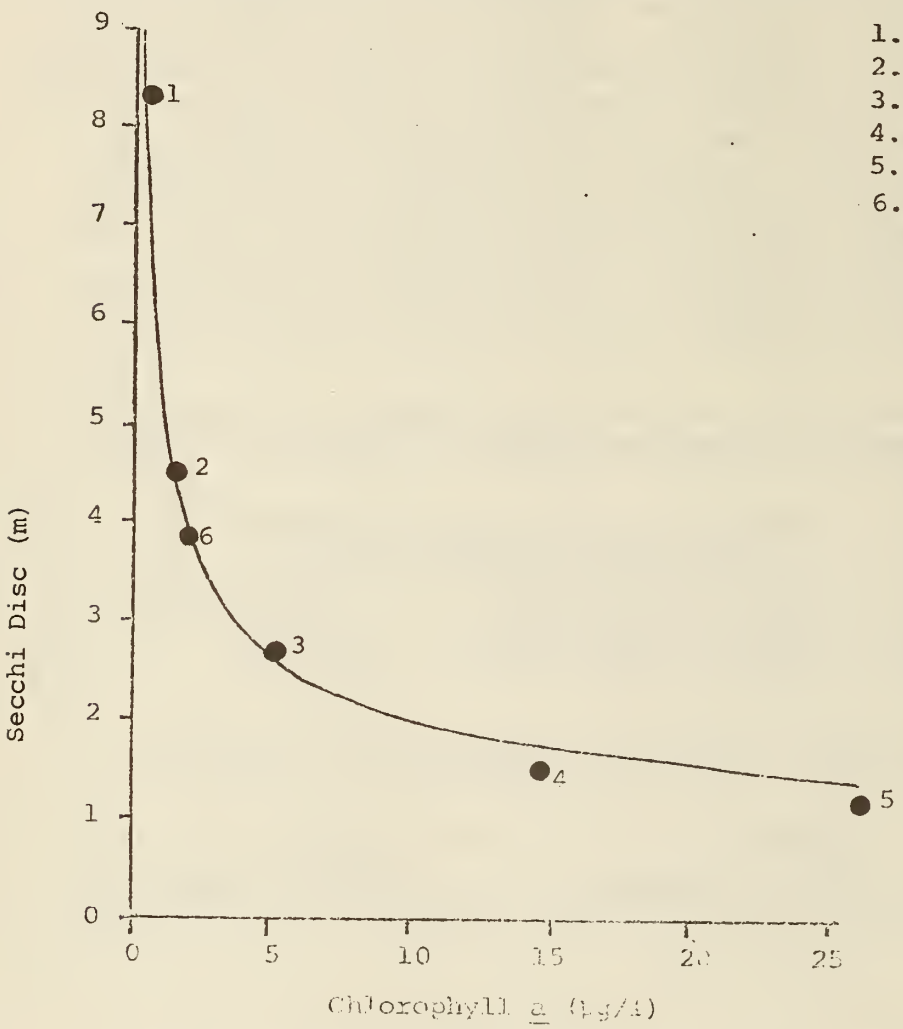
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 15	3.3	2.0				
July 7	3.8	2.5				
21	4.0	2.6				
Aug. 18	4.0	1.6				
Sept. 8	4.0	2.3				
Mean	3.8	2.2				

Secchi disc readings for the period sampled were lowest in mid-June and appeared to be relatively uniform from July to early September based on the information available. There were also no significant variations in chlorophyll a concentration during this time. Based on the seasonal averages for Secchi disc and chlorophyll a, Fairy Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Fairy Lake in 1974 and 1975.

Year	Station - Main S.D.	Chloro. a	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a
1971						
1972						
1973						
1974*	3.6	12.1				
1975	3.8	2.2				
..						
..						
..						

* based on one set of data only (August 28, 1974)



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Fairy Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Fairy Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Fairy Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for Fairy Lake, it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Bracebridge, Ontario,
P1L 1S1.

416-645-3050

Mr. G. Robinson.

Ontario

Ministry of the Environment

Fox Lake

(Stisted Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Fox Lake in 1975.

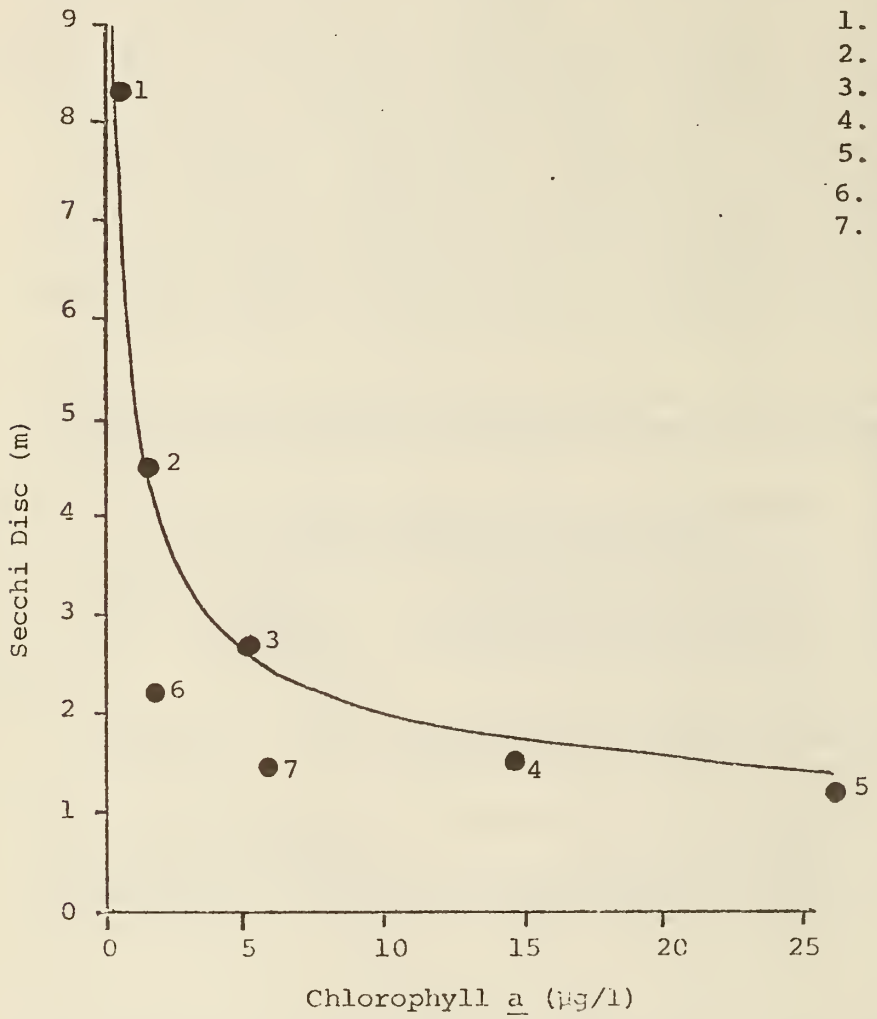
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 29	0.8	8.3				
July 21	2.0	3.8				
Mean	1.4	6.0				

Insufficient data was collected to allow a meaningful conclusion to be reached. In addition, since Fox Lake is a brown-water lake, to rank it according to the above system is not entirely justified.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Fox Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	2.2	2.1				
1975*	1.4	6.0				
..						
..						
..						

*based on one set of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Fox Lake - 1974
7. Fox Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Fox Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Fox Lake was positioned somewhat below the established curve due to the reduction in water clarity by the coloured water (Figure 1). However, because of the limited amount of data available and the coloured nature of the lake, Fox Lake should not be included in Figure 1 for comparative purposes.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

George's Lake

(Harcourt Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

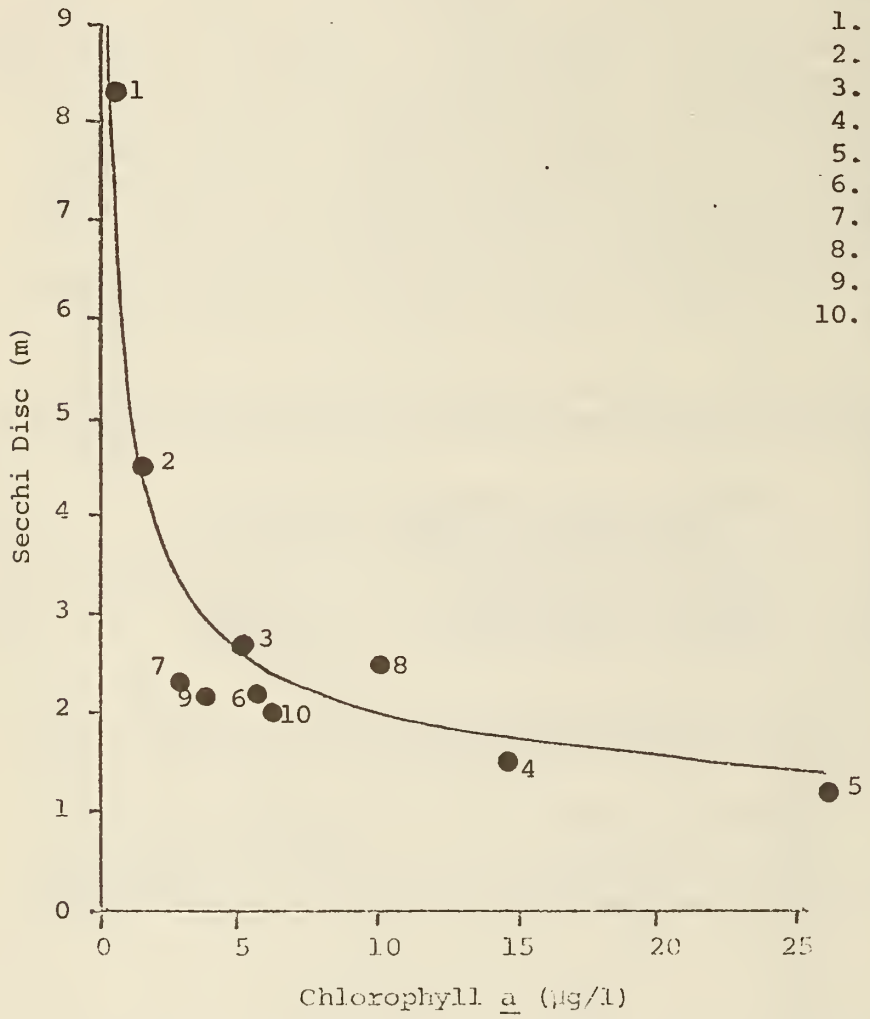
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from George's Lake in 1975.

Date	Station - Main		Station - "o"		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 15	2.0	5.5	1.8	4.9		
July 1	3.0	14.0	-	-		
7	3.0	15.0	-	-		
13	2.3	9.6	2.5	7.8		
20	2.5	11.0	-	-		
27	2.3	8.9	-	-		
Aug. 10	2.1	6.6	-	-		
17	2.5	15.0	-	-		
24	2.3	9.8	-	-		
31	-	-	1.8	6.4		
Sept 1	2.5	6.9	-	-		
Mean	2.5	10.2	2.0	6.4		

Secchi disc readings for the period sampled were generally uniform, ranging from 2.0 to 3.0m at the main lake station (Table 1). Whereas, chlorophyll a concentrations tended to fluctuate considerably with the highest levels recorded in early July and mid-August. Based on the seasonal averages for Secchi disc and chlorophyll a, George's Lake (main lake) would be considered enriched, with high algal densities. With only limited data available, the "o" station appears to be similar to the main lake on the similar sampling dates.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from George's Lake in 1973, 1974, and 1975.

Year	Station - Main		Station - "o"		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	2.2	5.8				
1974	2.3	3.0	2.2	3.9		
1975	2.5	10.2	2.0	6.4		
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. George's Lake (Main) - 1973
7. George's Lake (Main) - 1974
8. George's Lake (Main) - 1975
9. George's Lake ("o") - 1974
10. George's Lake ("o") - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for George's Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there has been no significant change in mean Secchi disc values in George's Lake; however, mean chlorophyll a concentrations have varied markedly (Table 2, Figure 1). The 1975 main lake value is the highest on record and represents more than a three-fold increase over the 1974 value. Continued sampling will be necessary to determine if this increase indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Perrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

Gloucester Pool

(Baxter & Tay Twps., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Gloucester Pool in 1975.

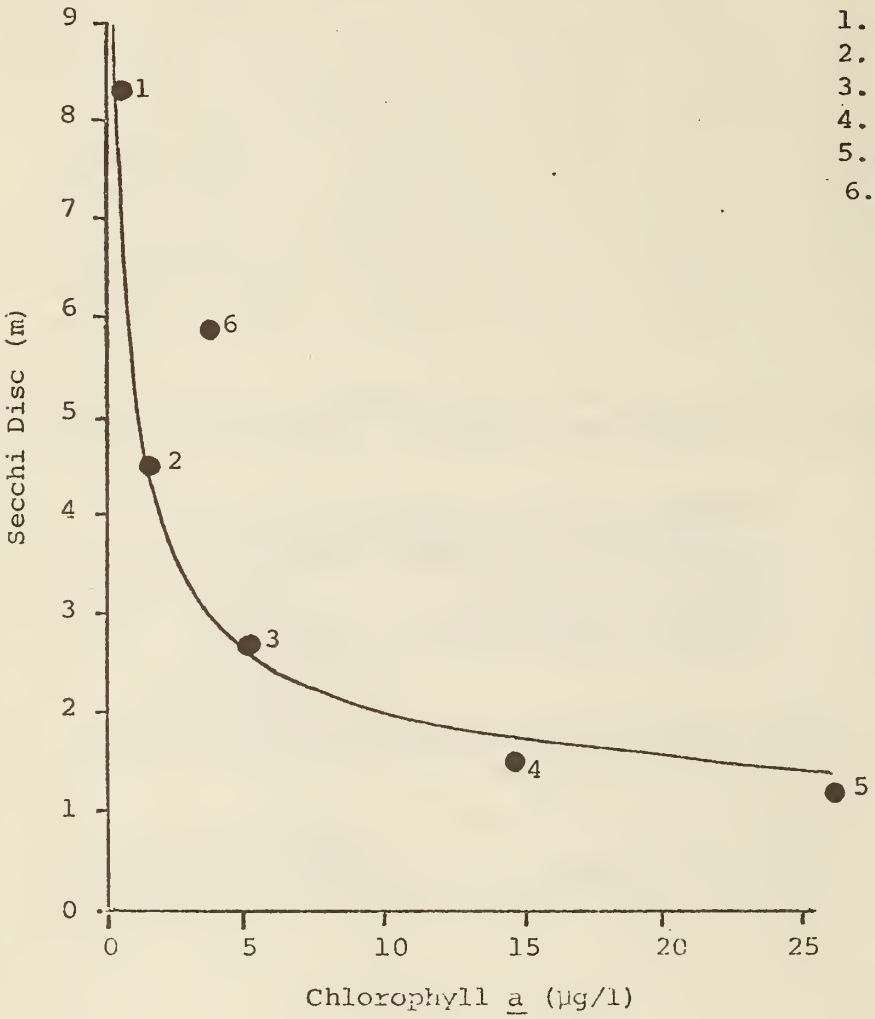
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 17	5.8	3.8				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Gloucester Pool in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975 *	5.8	3.8				
..						
..						
..						

*based on one set of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Gloucester Pool - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Gloucester Pool and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of Gloucester Pool in Figure 1 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1975 position has been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

GRACE LAKE

(Harcourt Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

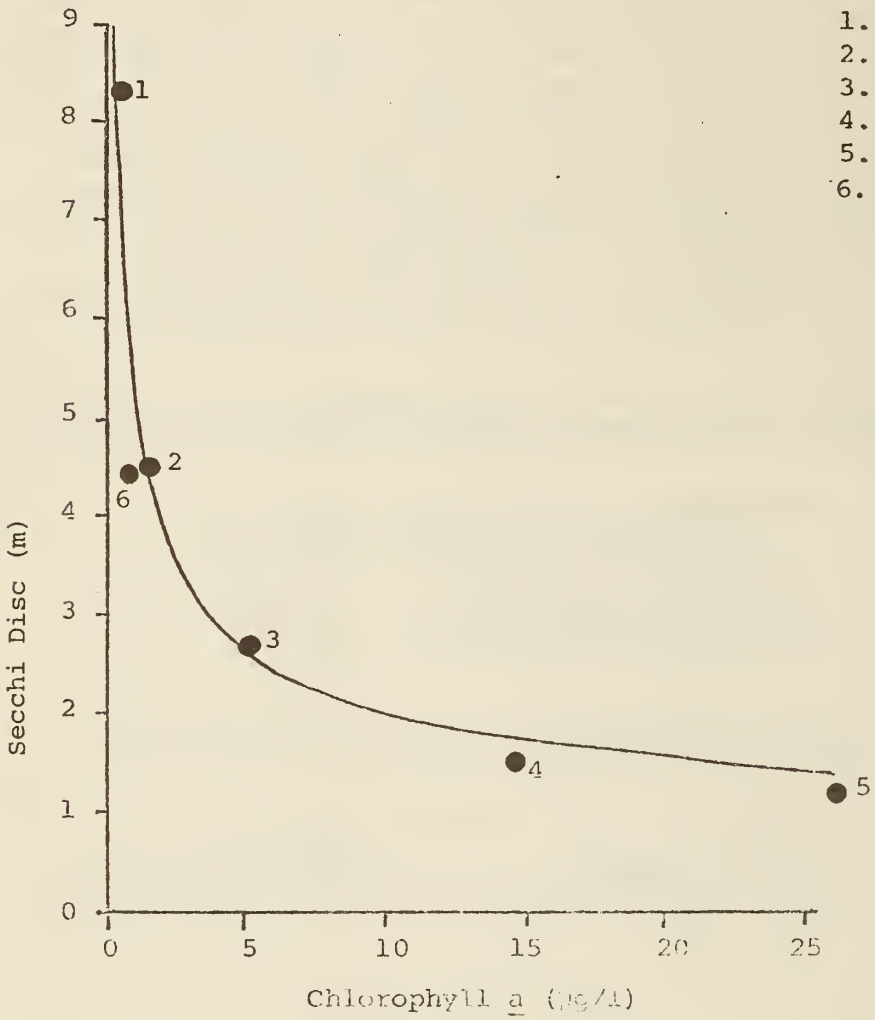
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Grace Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	1.6	1.1				
25	4.2	0.8				
June 1	5.4	0.9				
8	6.6	1.5				
15	3.6	0.6				
22	3.3	0.4				
29	3.3	0.8				
July 6	3.4	1.7				
13	3.9	1.8				
20	4.5	1.6				
Aug. 3	4.2	1.1				
9	5.1	0.9				
Sept. 7	8.1	1.3				

Secchi disc readings for the period sampled fluctuated considerably, ranging from 1.6 m in mid-May to 8.1 m in early September. Since chlorophyll a concentrations did not undergo corresponding variations, but were, in fact, uniformly low, it must be assumed that weather or turbidity problems were partially responsible for the extreme range observed. Based on the seasonal averages for Secchi disc and chlorophyll a, Grace Lake would be considered moderately enriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Grace Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	4.4	1.1				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Grace Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Grace Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Grace Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for Grace Lake (Table 2), it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Haliburton Lake

(Harburn Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

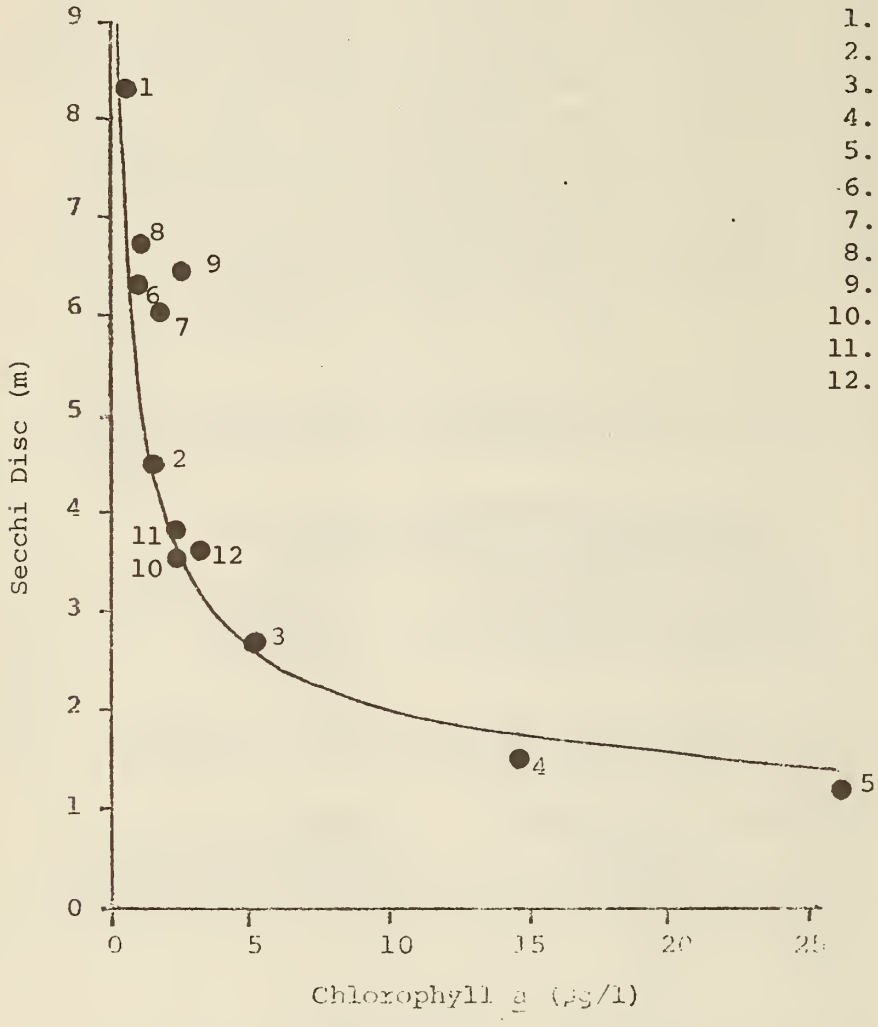
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Haliburton Lake in 1975.

Date	Station - Main		Station - South Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	5.7	2.4	3.3	2.2		
25	6.0	3.1	3.2	2.3		
June 1	5.4	3.5	3.3	3.4		
7	7.8	2.2	3.0	3.9		
14	8.1	1.9	3.3	3.4		
22	5.4	2.8	3.6	2.0		
29	5.7	4.4	3.9	0.9		
July 6	7.2	1.8	4.5	5.1		
12	6.6	2.3	4.2	2.2		
20	6.9	3.4	3.9	4.8		
27	6.0	1.0	2.7	4.5		
Aug. 3	6.0	3.3	3.9	4.4		
10	6.3	2.0	3.9	6.6		
17	6.9	2.7	3.6	2.1		
23	6.6	1.9	4.2	4.2		
31	6.3	1.9	3.3	1.4		

A considerable difference in water clarity and algal densities existed between the main lake station and the South Bay station. The lowest Secchi disc readings and highest chlorophyll a concentrations were measured in South Bay. Based on the seasonal averages for Secchi disc and chlorophyll a, the main lake would be considered unenriched, with moderately high algal densities; whereas South Bay would be considered moderately enriched, with slightly higher algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Haliburton Lake from 1972 to 1975.

Year	Station - Main		Station - South Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972 *	6.3	1.0	3.5	2.7		
1973	6.0	1.8	-	-		
1974	6.7	1.1	3.8	2.4		
1975	6.4	2.5	3.6	3.3		
..						
..						
..	*from Dillon (1974)					



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Haliburton Lake (main) - 1972
7. Haliburton Lake (main) - 1973
8. Haliburton Lake (main) - 1974
9. Haliburton Lake (main) - 1975
10. Haliburton Lake (South Bay) - 1972
11. Haliburton Lake (South Bay) - 1974
12. Haliburton Lake (South Bay) - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Haliburton Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in mean Secchi disc depths or mean chlorophyll a concentrations at either station (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

HALL'S LAKE

(Stanhope Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

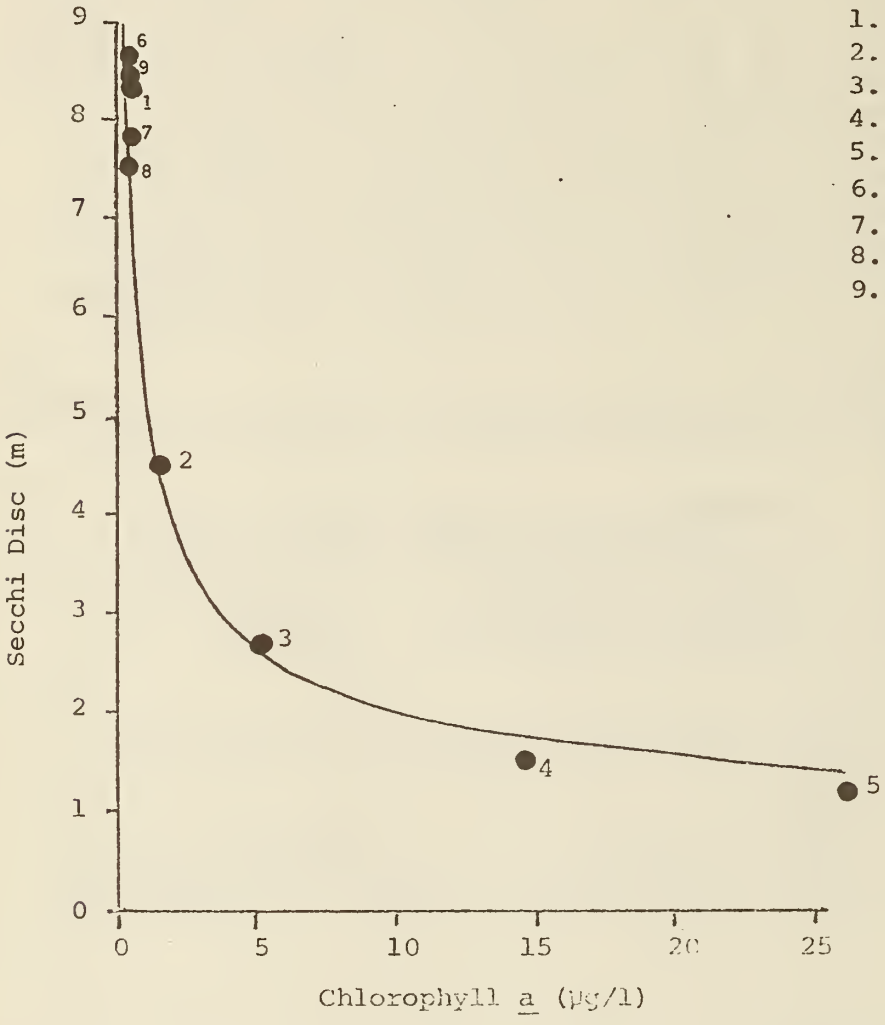
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Hall's Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 21	9.0	0.1				
July 1	8.1	0.6				
7	9.9	0.3				
13	7.5	1.1				
20	8.1	0.6				
27	7.2	0.1				
Aug. 3	7.8	0.6				
10	9.0	0.6				
17	7.5	0.9				
24	8.7	1.0				
Mean	8.3	0.6				

In general, water clarity in Hall's Lake was excellent and chlorophyll a concentrations were very low during the period sampled. Secchi disc readings ranged from 7.2 to 9.9 m with the lowest value recorded in late July (Table 1). Chlorophyll a concentrations ranged from 0.1 to 1.1 µg/l. Based on the seasonal averages for Secchi disc and chlorophyll a, Hall's Lake would be considered unenriched, with very low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Hall's Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	8.7	0.7				
1973	7.8	0.7				
1974	7.5	0.4				
1975	8.4	0.6				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Hall's Lake - 1972
7. Hall's Lake - 1973
8. Hall's Lake - 1974
9. Hall's Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Hall's Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been only minor fluctuations in mean Secchi disc readings, and chlorophyll a concentrations have not varied significantly (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

Hardwood Lake

(McClintock Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Hardwood Lake in 1975.

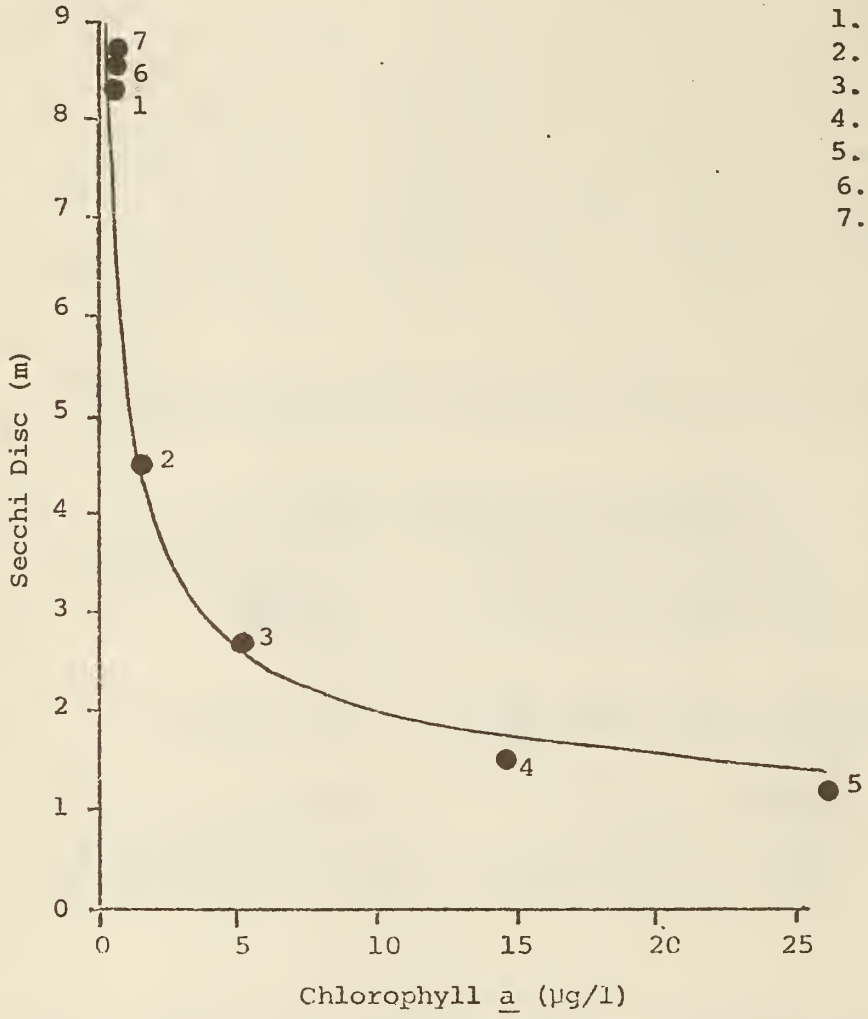
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
Aug. 10	8.7	1.0				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Hardwood Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	8.5	0.9				
1975*	8.7	1.0				
..						
..						
..						

*based on one set of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Hardwood Lake - 1974
7. Hardwood Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Hardwood Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of the Hardwood Lake information for 1975 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1975 position has been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Attn: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

HARP LAKE

(Chaffey Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

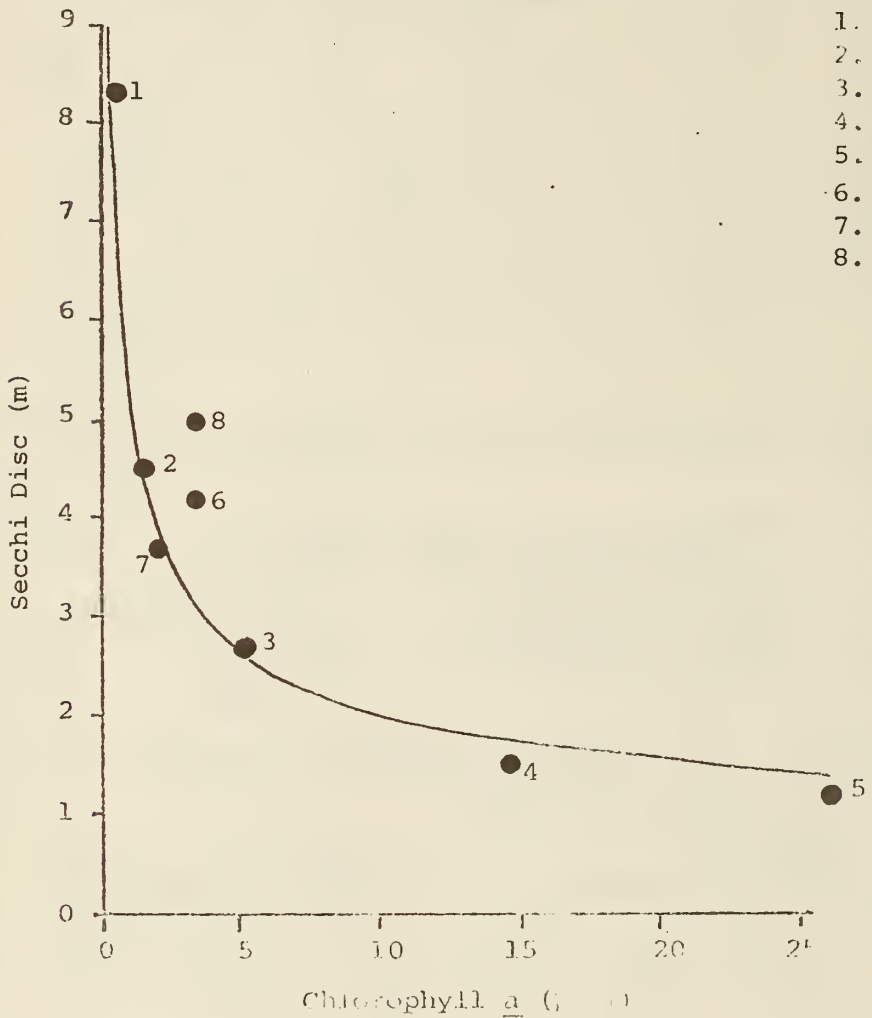
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Harp Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 13	4.8	3.8				
20	4.5	3.4				
27	4.4	3.7				
Aug. 4	5.5	3.2				
10	5.8	3.0				
17	4.8	2.9				
Mean	5.0	3.3				

Secchi disc readings for the period sampled were lowest in late July (Table 1), whereas, chlorophyll a concentrations did not vary significantly during the two month period. Based on the seasonal averages for Secchi disc and chlorophyll a, Harp Lake would be considered unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Harp Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	4.2	3.3				
1974	3.7	2.1				
1975	5.0	3.3				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Harp Lake - 1973
7. Harp Lake - 1974
8. Harp Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Harp Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been minor fluctuations in mean Secchi disc readings; however, the chlorophyll a concentrations have not varied significantly (Table 2). Harp Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands (Figure 1).

For additional copies of this report please contact

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E5.

416-424-3000

Attn: Mr. P. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
P.O. Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

HEAD LAKE

(Lexton & Digby Twps., Victoria County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

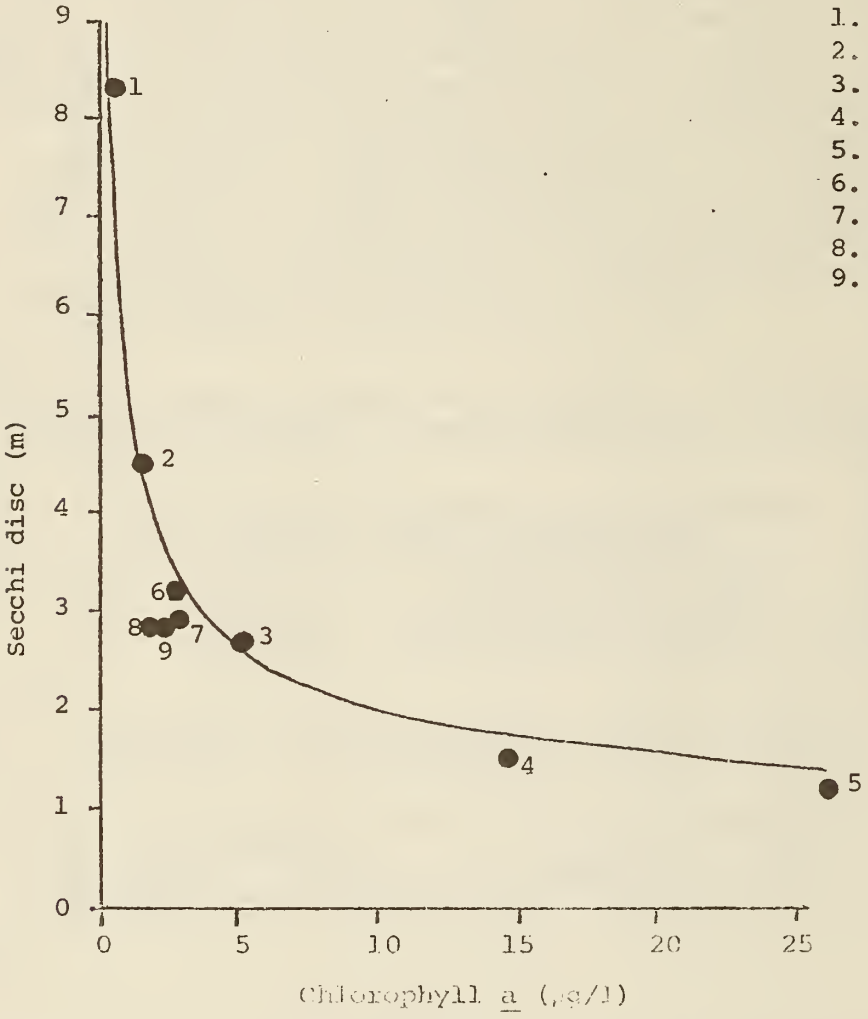
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Head Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 8	3.0	2.9				
15	3.0	5.3				
22	3.0	1.7				
29	2.2	1.7				
July 6	2.5	2.8				
13	2.3	3.6				
20	2.3	3.4				
27	3.5	1.4				
Aug. 4	4.0	1.7				
10	3.3	2.4				
17	3.0	2.7				
24	2.5	1.9				
31	2.7	2.9				
Sept.21	2.5	2.8				

Secchi disc readings for the period sampled were lowest in late June and early July, while the highest values were recorded in late July and early August (Table 1). Chlorophyll a concentrations tended to fluctuate considerably with the highest levels recorded in mid-June and mid-July. Based on the seasonal averages for Secchi disc and chlorophyll a, Head Lake would be considered enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Head Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	3.2	2.8				
1973	2.9	3.0				
1974	2.8	2.0				
1975	2.8	2.7				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Head Lake - 1972
7. Head Lake - 1973
8. Head Lake - 1974
9. Head Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Head Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Head Lake (Table 2). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

Horseshoe Lake

(Minden Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Horseshoe Lake in 1975.

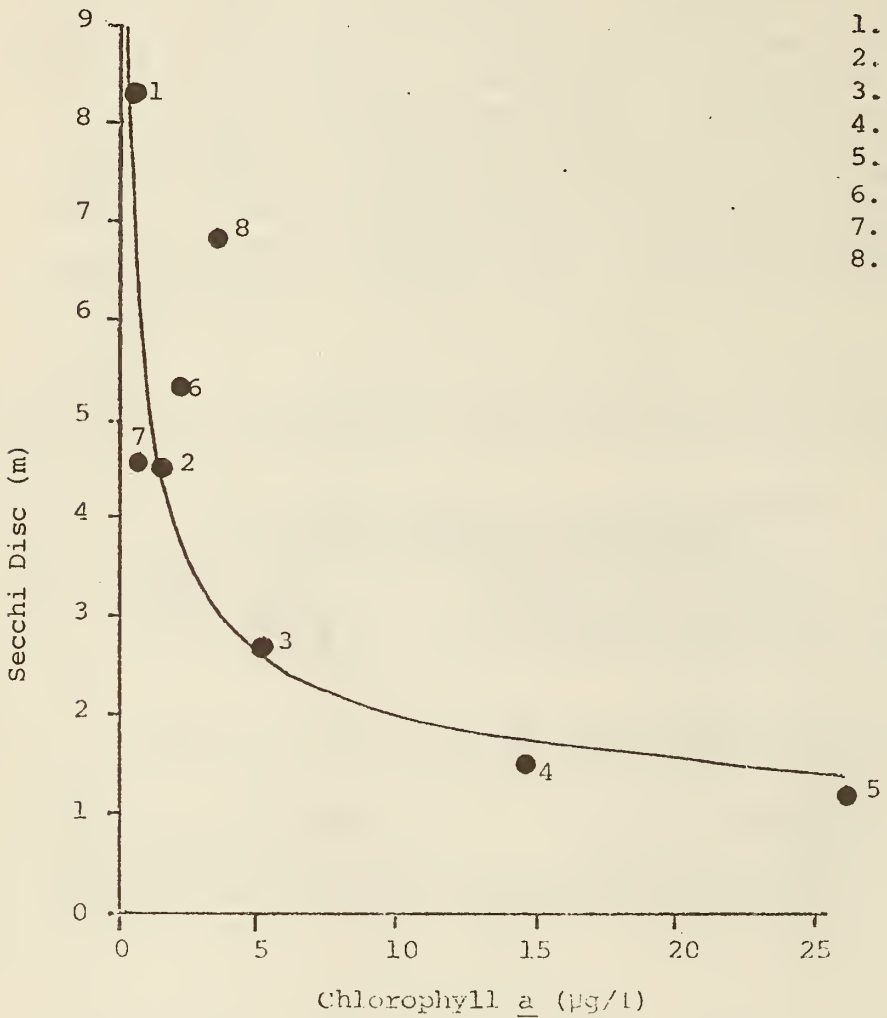
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
Aug. 9	6.1	4.0				
16	7.4	3.4				
Mean	6.8	3.7				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Horseshoe Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	5.3	2.3				
1974*	4.6	0.9				
1975*	6.8	3.7				

*based on two sets of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Horseshoe Lake - 1973
7. Horseshoe Lake - 1974*
8. Horseshoe Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Horseshoe Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of the Horseshoe Lake information for 1974 and 1975 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1974 and 1975 positions have been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

KASHAGAWIGAMOG LAKE

(Minden Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Kashagawigamog Lake in 1975.

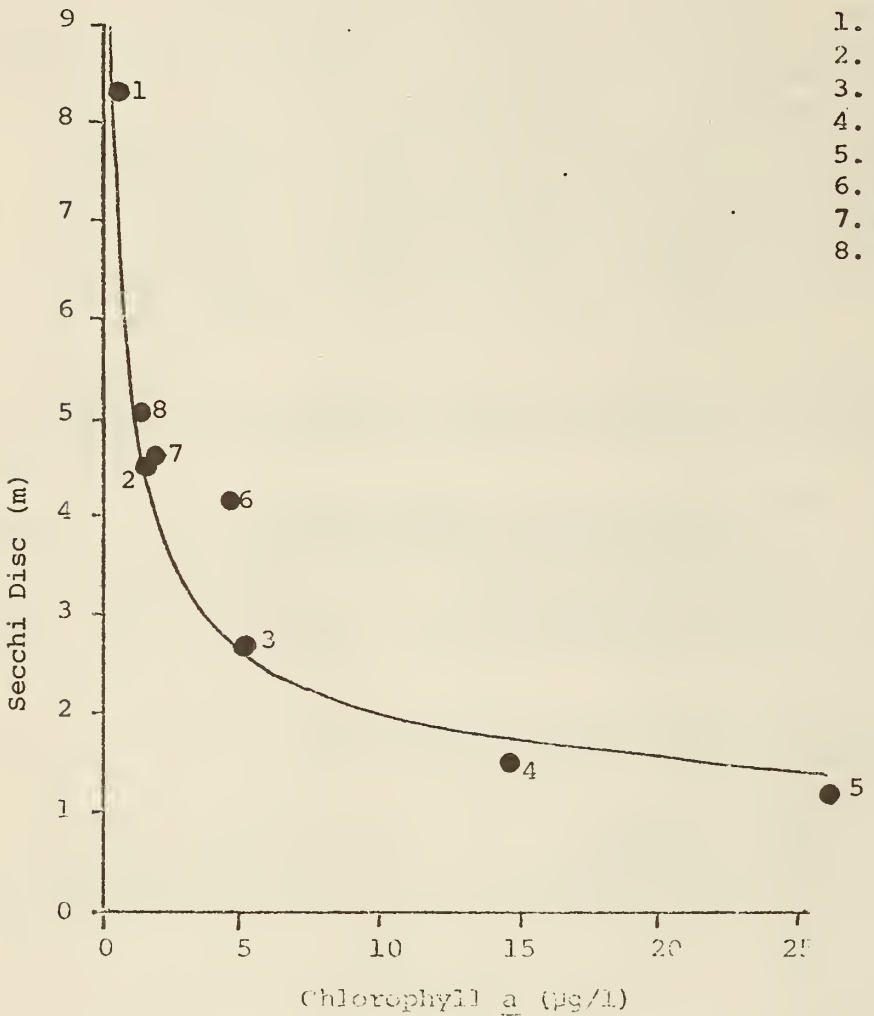
Date	Station - North		Station - South		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 1	6.1	1.0	-	-		
15	4.2	1.1	-	-		
30	4.5	2.8	-	-		
July 12	-	-	4.2	0.2		
13	3.3	1.7	-	-		
28	-	-	5.6	1.0		
Aug. 10	5.8	2.0	6.1	1.7		
24	-	-	4.8	1.6		
Sept. 7	5.5	1.7	-	-		
Mean	4.9	1.7	5.2	1.1		

No significant difference was apparent between the northern and southern basins of Kashagawigamog Lake during the period sampled (Table 1). The lowest Secchi disc reading observed was in mid-July at the northern end of the lake, whereas the highest values were recorded in early June and early August. Chlorophyll a concentrations were generally low at both stations. Based on the seasonal averages for the entire lake for Secchi disc and chlorophyll a, Kashagawigamog Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Kashagawigamog Lake from 1972 to 1975.

Year	Station - North		Station - South		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972*	4.2	4.7				
1973	4.6	2.0	4.5	1.7		
1974	4.4	1.4	4.6	1.5		
1975	4.9	1.7	5.2	1.1		

* Average for entire lake



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Kashagawigamog Lake - 1972*
7. Kashagawigamog Lake - 1973*
8. Kashagawigamog Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Kashagawigamog Lak and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been only minor variations in mean Secchi disc readings at both stations (Table 2, Figure 1). With the exception of the high chlorophyll a concentrations measured in 1972, mean chlorophyll a levels have also been relatively uniform. Continued sampling will be necessary to determine if the high chlorophyll a values measured in 1972 were significant.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Attn: Mr. P. Sh...

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

KENNAWAY LAKE

(Harcourt Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

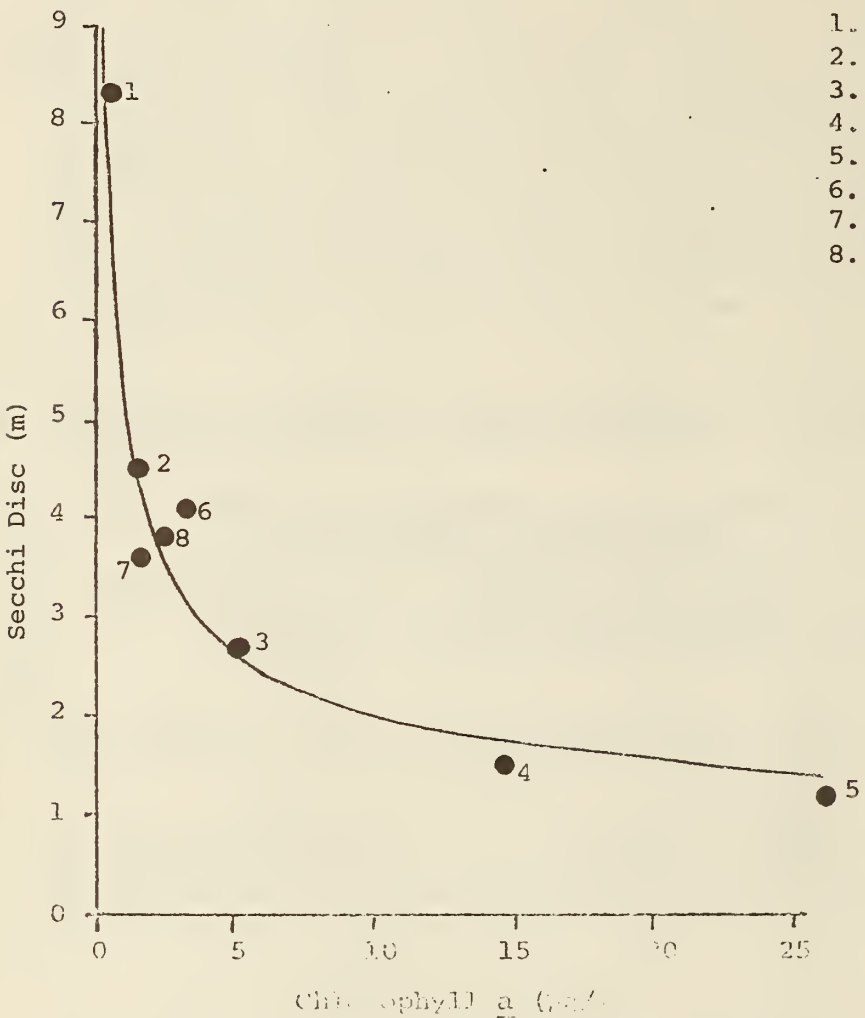
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Kennaway Lake in 1975.

Date	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
June 15	3.8	5.0				
30	3.5	1.9				
July 6	3.8	1.3				
13	4.0	1.8				
27	3.8	2.0				
Aug. 3	3.0	2.3				
10	4.3	-				
17	3.8	2.8				
24	3.8	2.1				
31	4.0	2.8				
Sept. 7	4.0	5.0				
Mean	3.8	2.7				

Secchi disc readings for the period sampled ranged from 3.0 to 4.3 m (Table 1) with only minor fluctuations from week to week. The highest chlorophyll a concentration (5.0 µg/l) occurred in mid-June and again in early September. Based on the seasonal averages for Secchi disc and chlorophyll a, Kennaway Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Kennaway Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	4.1	3.3				
1974	3.6	1.9				
1975	3.8	2.7				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Kennaway Lake - 1973
7. Kennaway Lake - 1974
8. Kennaway Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Kennaway Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Kennaway Lake (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3G3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

Kennisis Lake

(Havelock & Guilford Twps., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

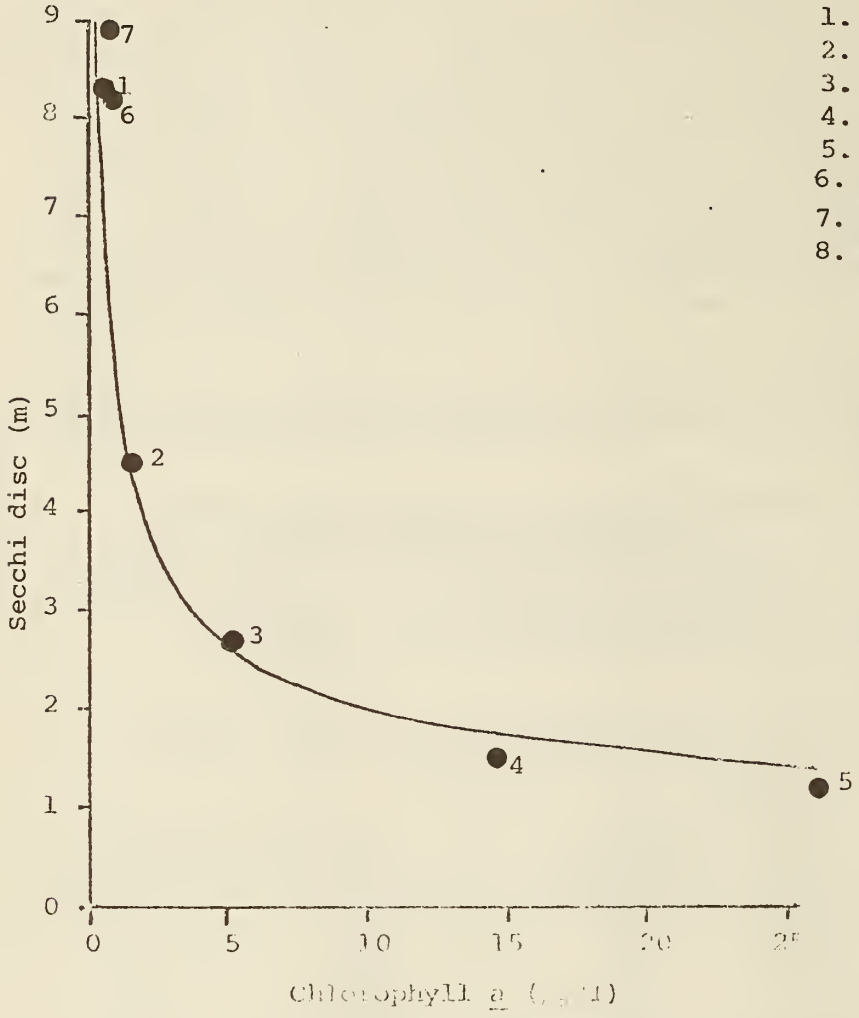
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Kennisis Lake in 1975

Date	Station - A		Station - B		Station - C	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	5.0	0.7	3.5	0.9	6.0	1.0
June 1	8.0	0.9	10.0	0.7	11.0	1.4
22	10.0	0.5	13.0	0.1	12.0	0.7
29	12.0	1.9	12.0	0.5	13.0	0.6
July 6	8.8	0.5	9.7	0.4	9.4	0.8
13	12.0	1.5	12.5	1.0	12.5	0.9
20	8.2	0.8	8.8	0.5	9.4	0.6
Aug. 3	10.3	1.1	9.4	0.7	10.6	0.8
10	10.0	0.7	11.0	0.8	11.0	0.9
17	10.9	1.3	10.6	0.6	10.6	0.7
24	10.0	1.0	10.0	0.8	10.0	0.6
28	-	0.6	-	0.7	-	0.7
Mean	9.6	1.0	10.0	0.6	10.5	0.8

No significant difference was apparent between mean values calculated for the three stations in Kennisis Lake (Table 1). However, an extremely wide range of Secchi disc readings was recorded for each station; for example, the maximum and minimum values at Station B were 3.5m and 14.0m, respectively. Since chlorophyll a concentrations did not undergo corresponding variations but were, in fact, uniformly low, it must be assumed that weather or turbidity problems were partially responsible for the range observed. Based on the seasonal averages for Secchi disc and chlorophyll a, Kennisis Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Kennisis Lake from 1972 to 1975.

Year	Station - A		Station - B		Station - C	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	6.7	1.0	9.0	0.9	8.8	0.9
1973	7.8	0.7	9.5	0.8	9.5	0.8
1974	7.7	0.8	8.6	0.5	8.6	0.4
1975	9.5	1.0	10.0	0.6	10.5	0.8



1. Kennisis Lake* - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Kennisis Lake* - 1972
7. Kennisis Lake* - 1973
8. Kennisis Lake* - 1975

*mean of three stations

Figure 1: The relationship between Secchi disc and chlorophyll a for Kennisis Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years Kennisis Lake has consistently exhibited high Secchi disc readings and very low chlorophyll a concentrations (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

KOSHLONG LAKE

(Glamorgan Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

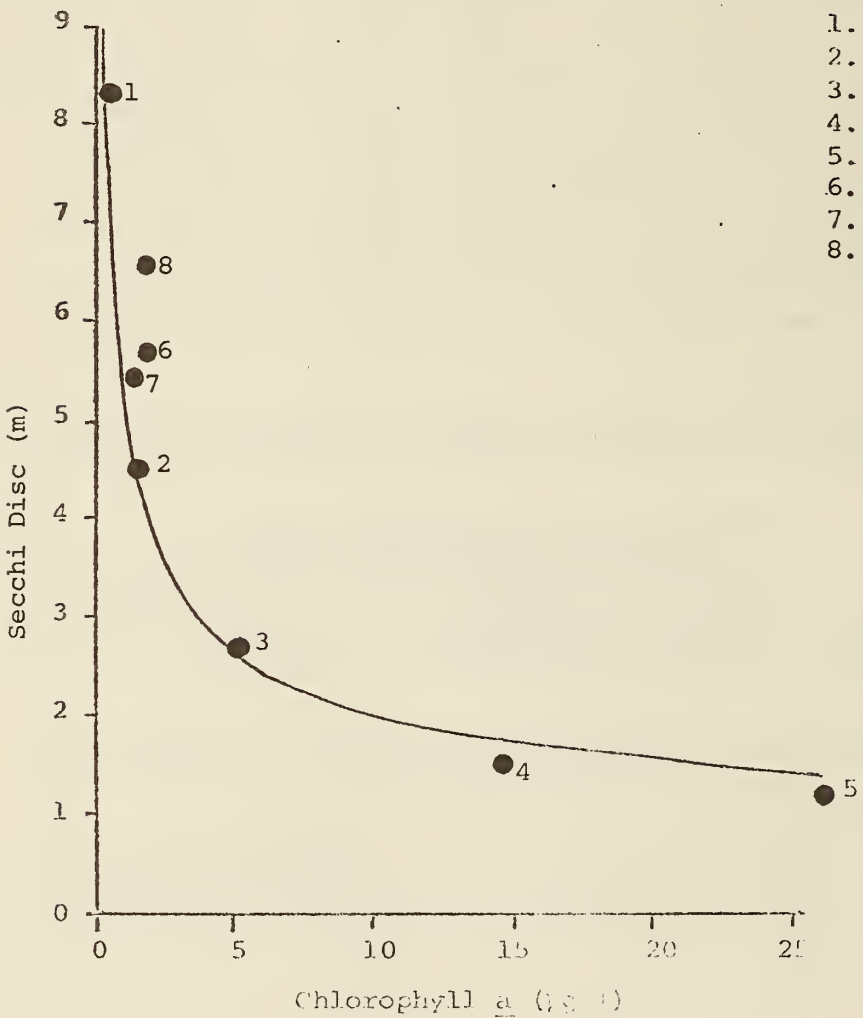
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Koshlong Lake in 1975.

Date	Station -Main S.D.	Station -Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
May 19	5.3	1.9				
25	5.8	0.6				
June 8	7.9	2.3				
15	6.8	1.4				
22	6.2	1.5				
30	6.7	1.3				
July 6	6.2	2.0				
13	5.9	2.5				
20	6.7	3.7				
Aug. 4	6.5	2.9				
17	7.0	1.7				
Sept. 1	7.3	1.1				
Mean	6.5	1.9				

Secchi disc readings for the period sampled were lowest in May (Table 1), while chlorophyll a concentrations were generally low. The highest chlorophyll a level, 3.7 µg/l, occurred on July 20. Based on the seasonal averages for Secchi disc and chlorophyll a, Koshlong Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Koshlong Lake from 1973 to 1975.

Year	Station - Main S.D.	Chloro. a	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a
1971						
1972						
1973	5.7	2.0				
1974	5.4	1.3				
1975	6.5	1.9				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Koshlong Lake - 1973
7. Koshlong Lake - 1974
8. Koshlong Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Koshlong Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

In 1975 the mean Secchi disc reading was slightly higher than the values calculated for the two previous years; however, there were no significant changes in the mean chlorophyll a concentrations (Table 2, Figure 1). Continued sampling will be necessary to determine if the improved water clarity measured in 1975 indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

LEONARD LAKE

(Monck Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Leonard Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 22	5.3	0.9				
Aug. 11	5.0	1.1				
18	5.4	0.9				
Sept.14	5.4	3.1				
Mean	5.3	1.5				

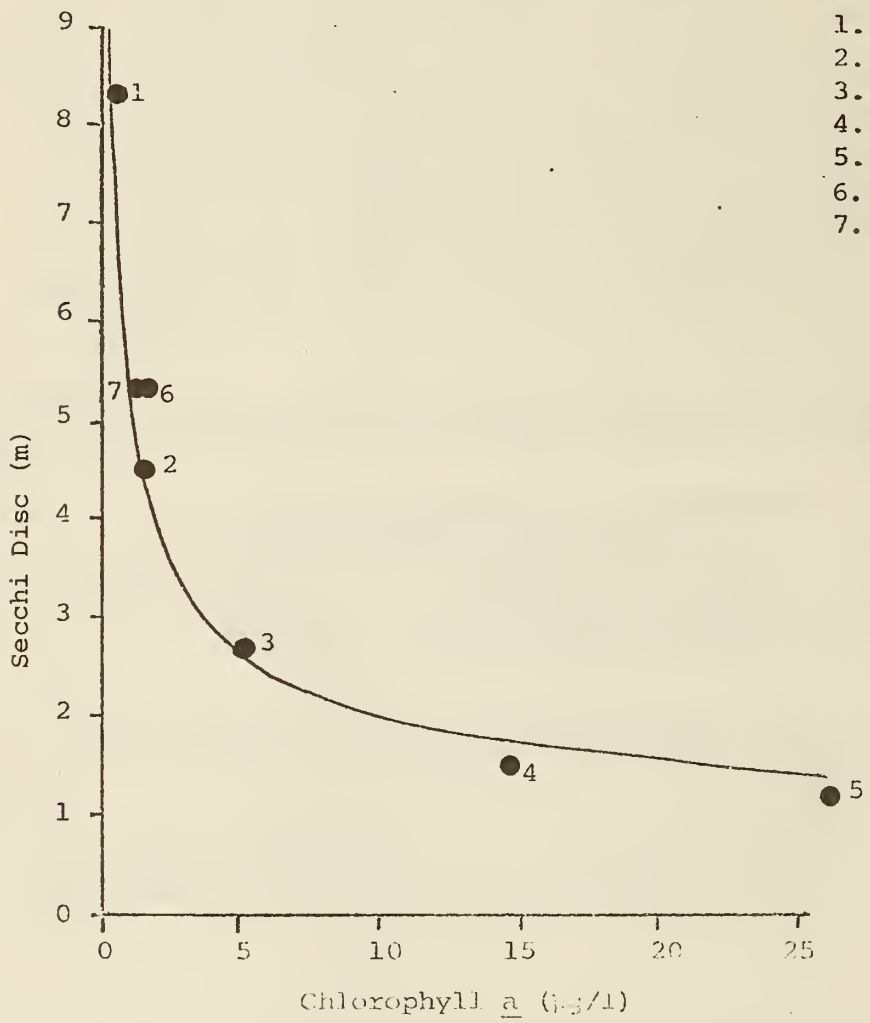
Since samples were collected on only four occasions in 1975 it is difficult to obtain even a reasonably accurate estimate of the trophic status of Leonard Lake.

Secchi disc readings for the period sampled were generally uniform, ranging from 5.0 m to 5.4 m (Table 1). The highest chlorophyll a concentration, 3.1 µg/l, occurred on September 14. Based on the average Secchi disc and chlorophyll a values which are available, Leonard Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Leonard Lake in 1971 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971*	5.3	1.8				
1972						
1973						
1974						
1975	5.3	1.5				
..						
..						
..						

* From M.O.E. Data



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Leonard Lake - 1971
7. Leonard Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Leonard Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Again, it must be emphasized that only limited data is available, but it would appear that no significant changes in Secchi disc readings or chlorophyll a concentrations have occurred in Leonard Lake since 1971 (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

LITTLE KENNISIS LAKE

(Havelock Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

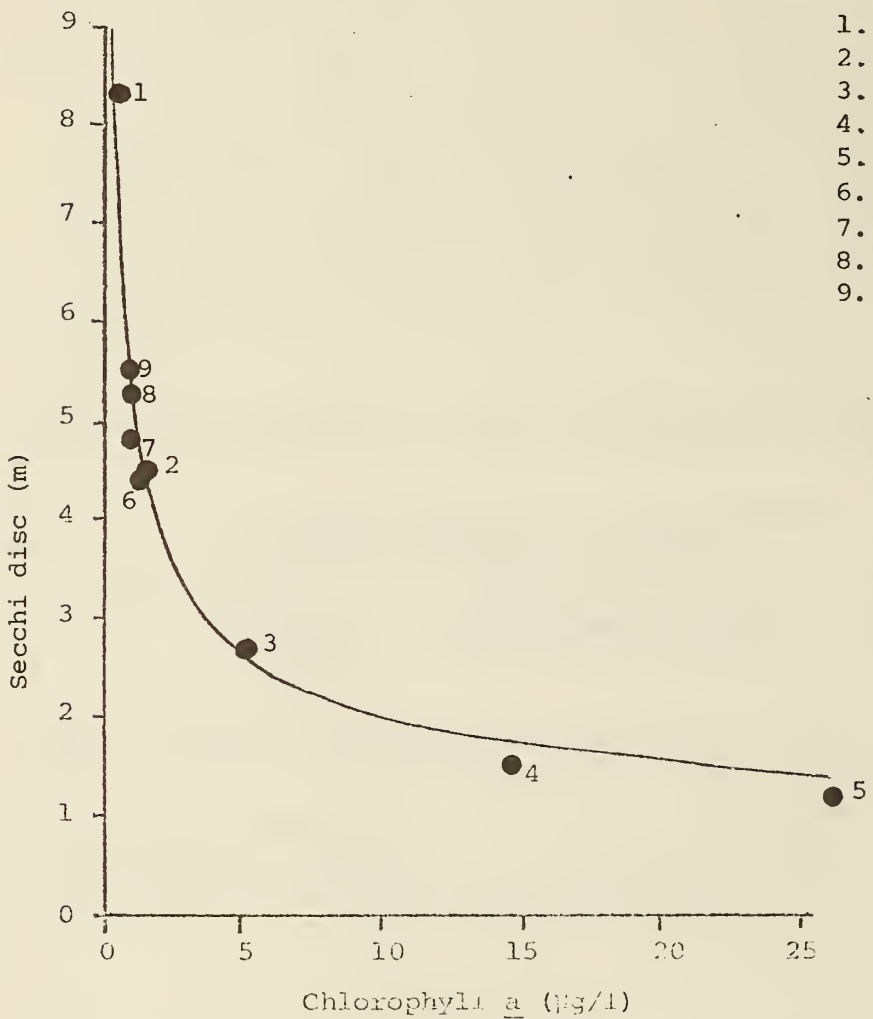
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Little Kennisis Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	3.5	0.6				
June 1	6.0	0.7				
22	5.0	0.9				
29	4.5	1.0				
July 6	5.0	1.4				
13	5.0	1.7				
20	5.7	1.0				
Aug. 3	6.0	1.3				
10	6.5	0.8				
17	6.9	1.0				
24	6.5	0.7				
28	-	0.8				
Mean	5.5	1.0				

As in the case of Kennisis Lake, a relatively wide range of Secchi disc values was recorded. Readings for the period sampled ranged from 3.5 m in mid-May to 6.9 m in mid-August. Chlorophyll a concentrations did not vary significantly between May and August. Based on the seasonal averages for Secchi disc and chlorophyll a, Little Kennisis Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Little Kennisis Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	4.4	1.6				
1973	4.8	1.1				
1974	5.3	1.1				
1975	5.5	1.0				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Little Kennisis Lake - 1972
7. Little Kennisis Lake - 1973
8. Little Kennisis Lake - 1974
9. Little Kennisis Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Little Kennisis La and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there has been a slight, but consistent, increase in Secchi disc readings and a corresponding decrease in chlorophyll a concentrations (Table 2, Figure 1). Additional sampling will be necessary to determine if this trend towards improved water clarity is continuing.

For additional copies of this report, please contact:

Ontario Ministry of the Environment, or
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3055
Mr. C. Robinson.

Ontario

Ministry of the Environment

LITTLE STRAGGLE LAKE

(Harcourt Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

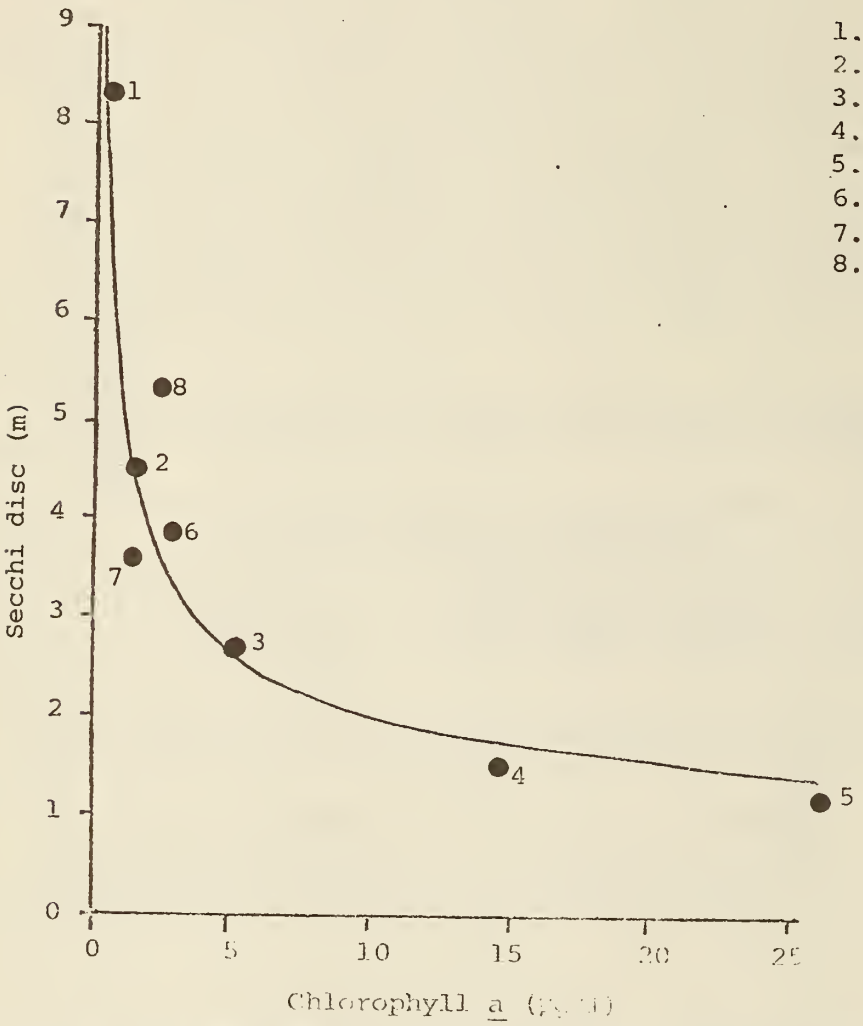
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Little Straggle Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 1	5.3	3.2				
6	5.3	3.0				
13	5.6	1.8				
20	5.3	1.5				
27	4.7	2.6				
Aug. 4	5.0	2.6				
10	5.0	3.4				
17	5.3	2.8				
24	5.0	3.5				
Sept.1	5.0	1.5				
7	5.6	1.6				
14	5.9	2.0				
21	5.9	1.5				
28	5.0	2.1				
Mean	5.3	2.4				

Secchi disc readings for the period sampled were generally uniform, ranging from 4.7 m to 5.9 m (Table 1). Chlorophyll a concentrations were highest in early July and in August. Based on the seasonal averages for Secchi disc and chlorophyll a, Little Straggle Lake would be considered unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Little Straggle Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	3.8	2.9				
1974	3.6	1.6				
1975	5.3	2.4				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Little Straggle Lake - 1973
7. Little Straggle Lake - 1974
8. Little Straggle Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Little Straggle L and a number of other well-known recreational lakes in the province. All data are seasonal means.

In 1975 the mean Secchi disc reading was slightly higher than the values calculated for the two previous years; however, there were no significant changes in the mean chlorophyll a concentrations (Table 2, Figure 1). Continued sampling will be necessary to determine if the improved water clarity measured in 1975 indicates a trend.

For additional copies of this report, please contact

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

LOONCALL LAKE

(Anstruther Twp., Peterborough County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

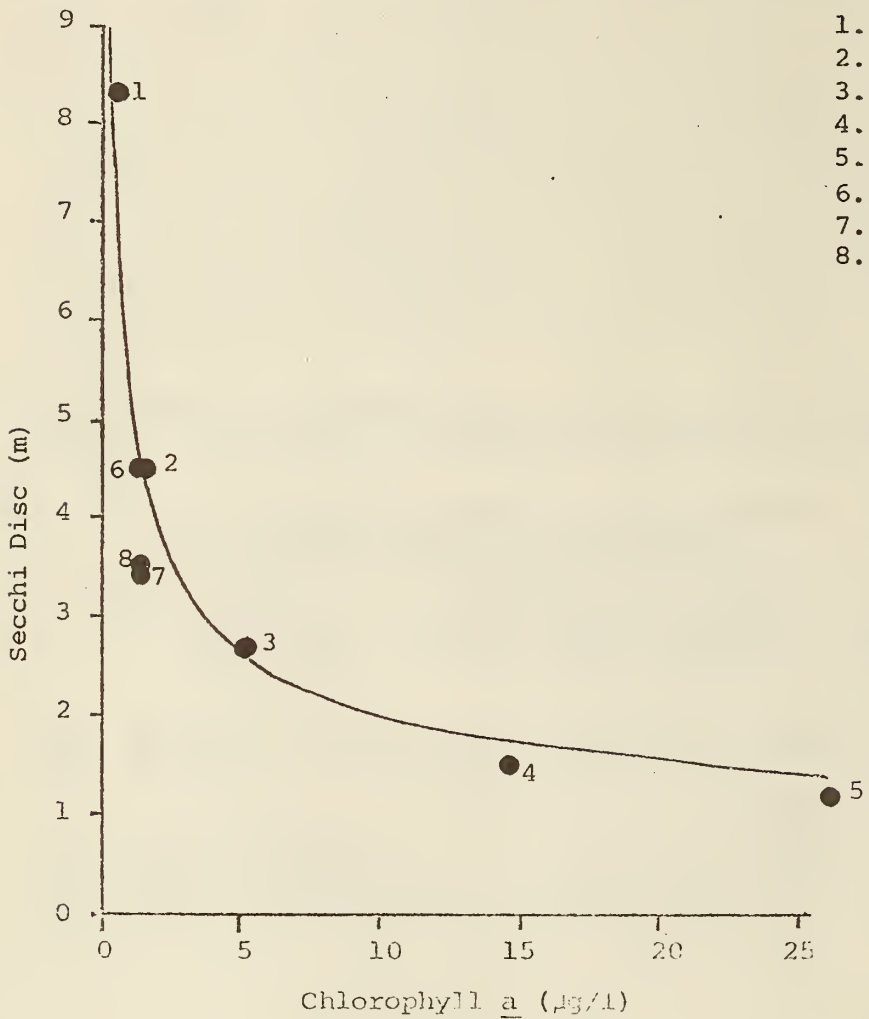
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Looncall Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 3	2.8	1.7				
18	2.5	2.1				
Aug. 4	4.3	1.4				
13	2.8	1.3				
24	4.0	1.3				
Sept.2	3.8	1.9				
7	4.0	1.4				
Mean	3.5	1.6				

Secchi disc readings for the period sampled were lowest in mid-July, and at the same time the chlorophyll a concentration was correspondingly highest. Based on the seasonal averages for Secchi disc and chlorophyll a, Looncall Lake would be considered moderately enriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Looncall Lake from 1971 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971	4.5	1.5				
1972						
1973						
1974	3.4	1.6				
1975	3.5	1.6				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Looncall Lake - 1971
7. Looncall Lake - 1974
8. Looncall Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Looncall Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

In 1974 and 1975 the mean Secchi disc readings were slightly lower than the value calculated for 1971; however, there were no significant changes in the mean chlorophyll a concentrations (Table 2, Figure 1). Continued sampling will be necessary to determine if the decreased water clarity measured in 1974 and 1975 indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

MARY LAKE

(Stephenson & Brunel Twps. Regional Municipality of Muskoka).

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Mary Lake in 1975.

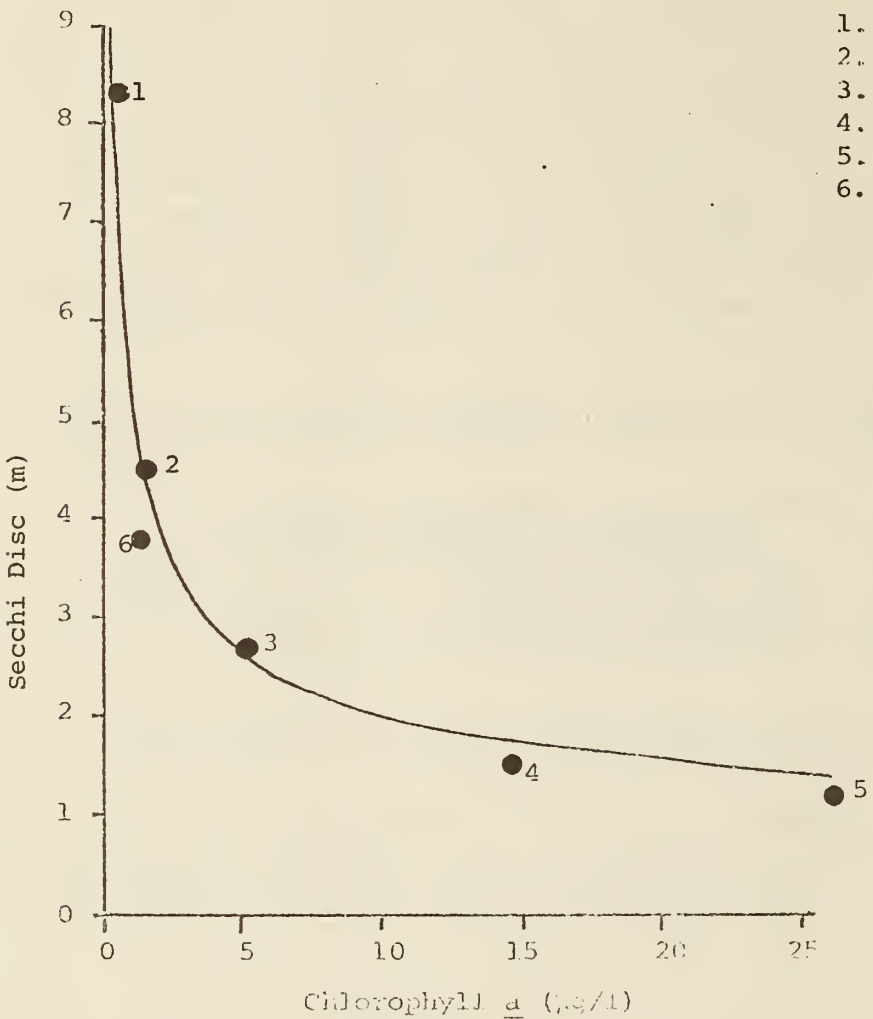
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 2	-	0.9				
14	4.0	1.4				
28	4.0	0.8				
Aug. 11	4.0	3.1				
26	4.0	1.9				
Sept. 8	3.0	1.9				
22	3.5	1.8				
Mean	3.8	1.7				

Secchi disc readings for the period sampled were uniform in July and August, but measured slightly lower in September. The highest chlorophyll a concentration, 3.1 µg/l, occurred on August 11. Based on the seasonal averages for Secchi disc and chlorophyll a, Mary Lake would be considered moderately enriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Mary Lake in 1974 and 1975.

Year	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a
1971						
1972						
1973						
1974*	4.5	1.7				
1975	3.8	1.7				
..						
..						
..						

* based on one set of data only (August 28, 1974)



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Mary Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Mary Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Mary Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for May Lake (Table 2), it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

Medora Lake

(Medora Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

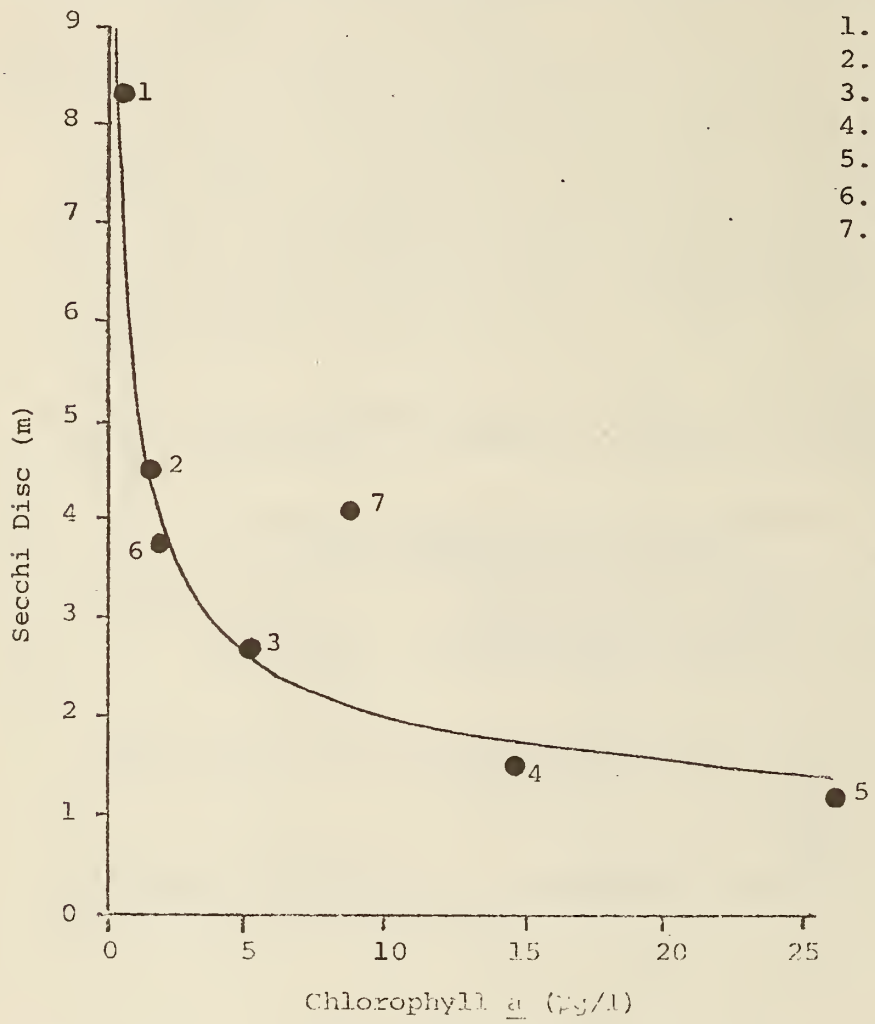
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Medora Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 15	3.8	2.8				
22	3.6	1.8				
30	3.8	2.6				
July 7	3.6	4.6				
14	3.0	3.9				
22	3.9	2.8				
Aug. 5	5.5	24.0				
11	5.5	16.0				
18	5.0	31.0				
26	3.8	9.0				
Sept 14	2.9	3.0				
21	4.4	6.3				
Mean	4.1	9.0				

Secchi disc readings for the period sampled ranged from 2.9 m to 5.5 m with the lowest values recorded in mid-July and mid-September (Table 1). Chlorophyll a concentrations fluctuated over an extremely wide range (1.8 µg/l to 31.0 µg/l) and did not correlate well with the Secchi disc values. The very high values measured in August may represent a large algal bloom existing near the lake bottom or could be the result of bottom sediments being disturbed during sampling. Based on the seasonal averages for Secchi disc and chlorophyll a, Medora Lake would be considered moderately enriched, with relatively high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Medora Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	3.7	2.0				
1975	4.1	9.0				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Medora Lake - 1974
7. Medora Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Medora Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past two years there has been no significant change in mean Secchi disc readings, but the mean chlorophyll a concentration has increased more than four-fold (Table 2). As a result, the 1975 position for Medora Lake in Figure 1 was well-removed from the established curve. If the August chlorophyll a values were disregarded, this point would shift to a position comparable to the 1974 results. It is recommended that the sampling programme be continued to determine if the higher algal densities measured in 1975 indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Methuen Lake

(Methuen Twp., Peterborough County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Methuen Lake in 1975.

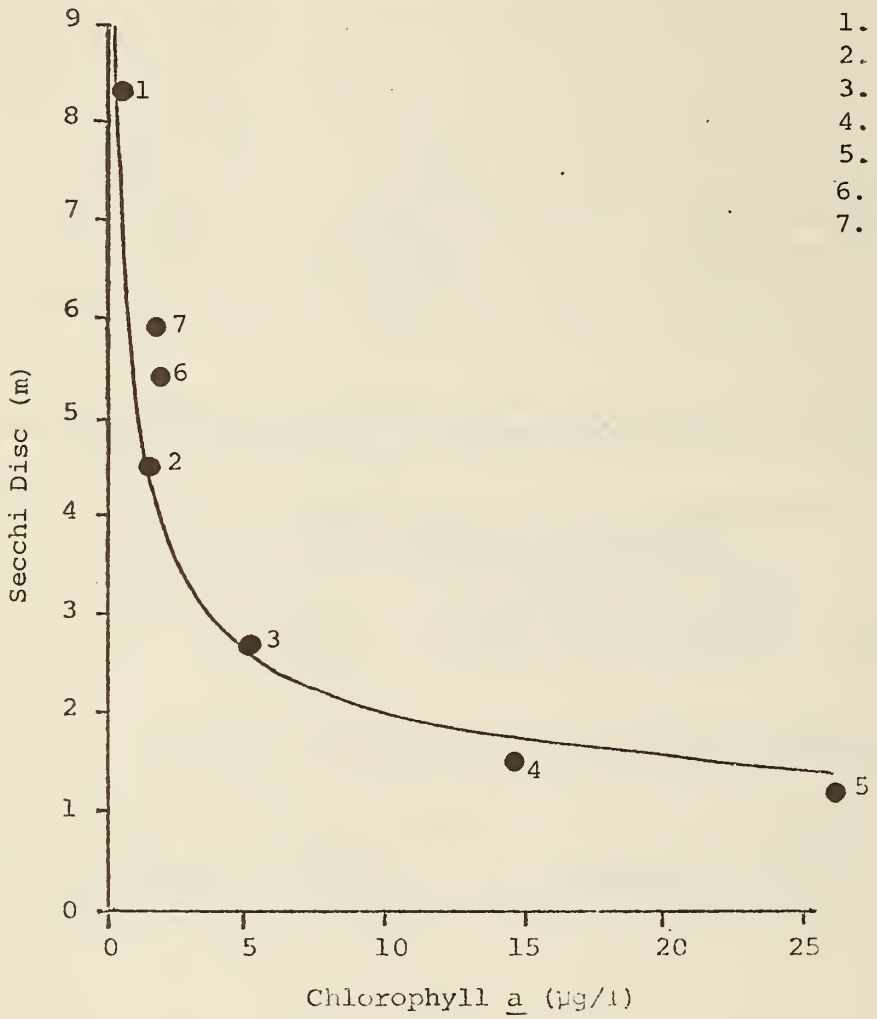
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
Aug. 4	5.6	2.1				
10	6.2	1.6				
Mean	5.9	1.8				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Methuen Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	5.4	1.9				
1975*	5.9	1.8				
..						
..						
..						

*based on two sets of data only



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Methuen Lake - 1974
7. Methuen Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Methuen Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of the Methuen Lake information for 1975 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1975 position has been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

OXTONGUE LAKE

(McClintock Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

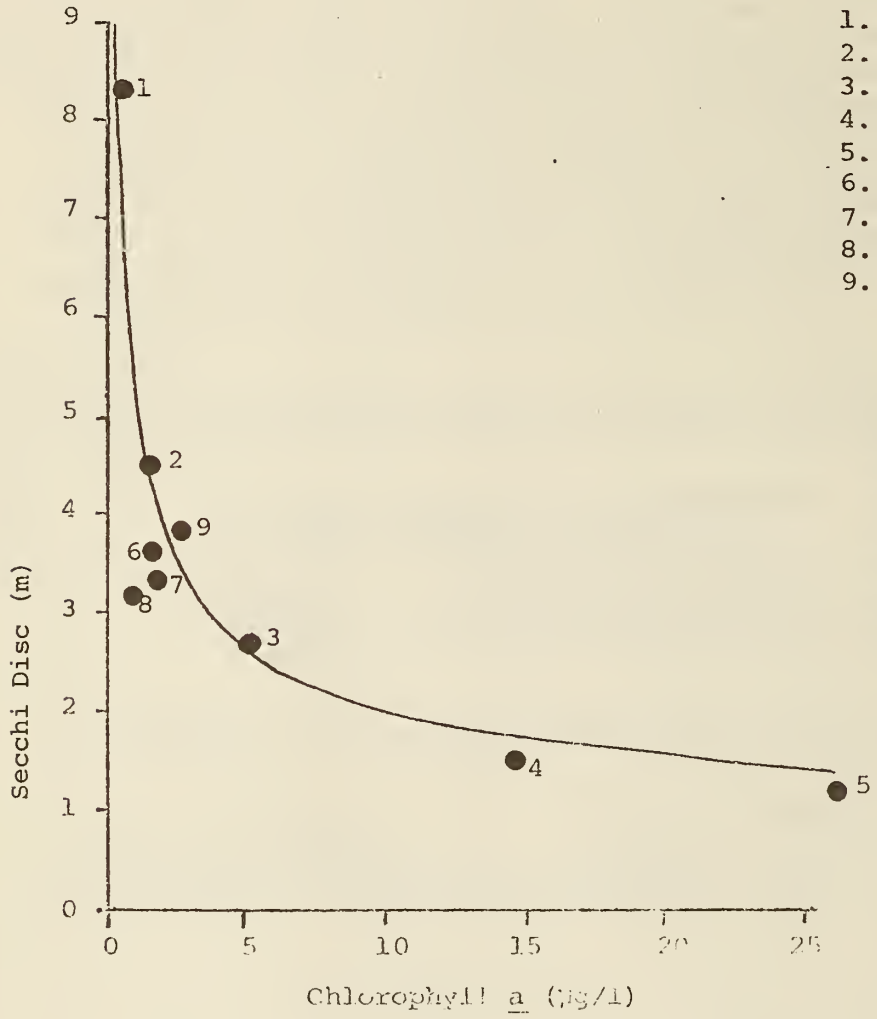
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Oxtongue Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 14	3.3	2.5				
22	3.8	1.8				
28	3.3	2.0				
July 1	4.5	2.9				
6	3.6	3.0				
13	3.8	1.2				
20	3.6	3.4				
Aug. 29	3.5	8.4				
Sept. 7	4.2	1.4				
14	4.1	1.7				
Mean	3.8	2.8				

Secchi disc readings for the period sampled were generally uniform, ranging from 3.3 m to 4.5 m (Table 1). Chlorophyll a concentrations, with the exception of one high reading in late August (8.4 µg/l), were generally low. Based on the seasonal averages for Secchi disc and chlorophyll a, Oxtongue Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Oxtongue Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	3.6	1.8				
1973	3.3	2.0				
1974	3.2	1.2				
1975	3.8	2.8				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Oxtongue Lake - 1972
7. Oxtongue Lake - 1973
8. Oxtongue Lake - 1974
9. Oxtongue Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Oxtongue Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in Secchi disc readings or chlorophyll a concentrations in Oxtongue Lake (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

Peninsula Lake

(Chaffey & Franklin Twps.,
Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Peninsula Lake in 1975.

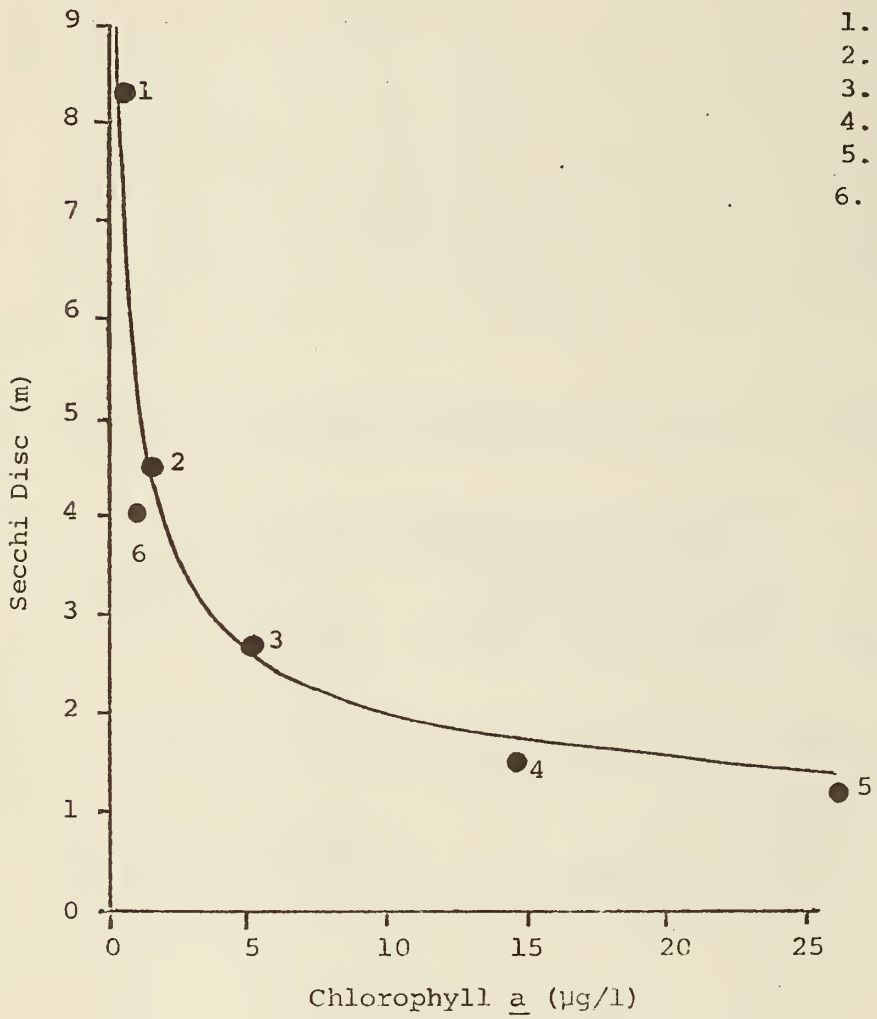
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 20	4.0	1.1				

Insufficient data was collected to allow a meaningful conclusion to be reached.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Peninsula Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975 *	4.0	1.1				
..						
..						
..						

*based on one set of data only.



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Peninsula Lake - 1975*

Figure 1: The relationship between Secchi disc and chlorophyll a for Peninsula Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The inclusion of Peninsula Lake in Figure 1 is not entirely justified due to the limited amount of data available; however, for comparative purposes the 1975 position has been indicated.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

PINE LAKE

(Oakley Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

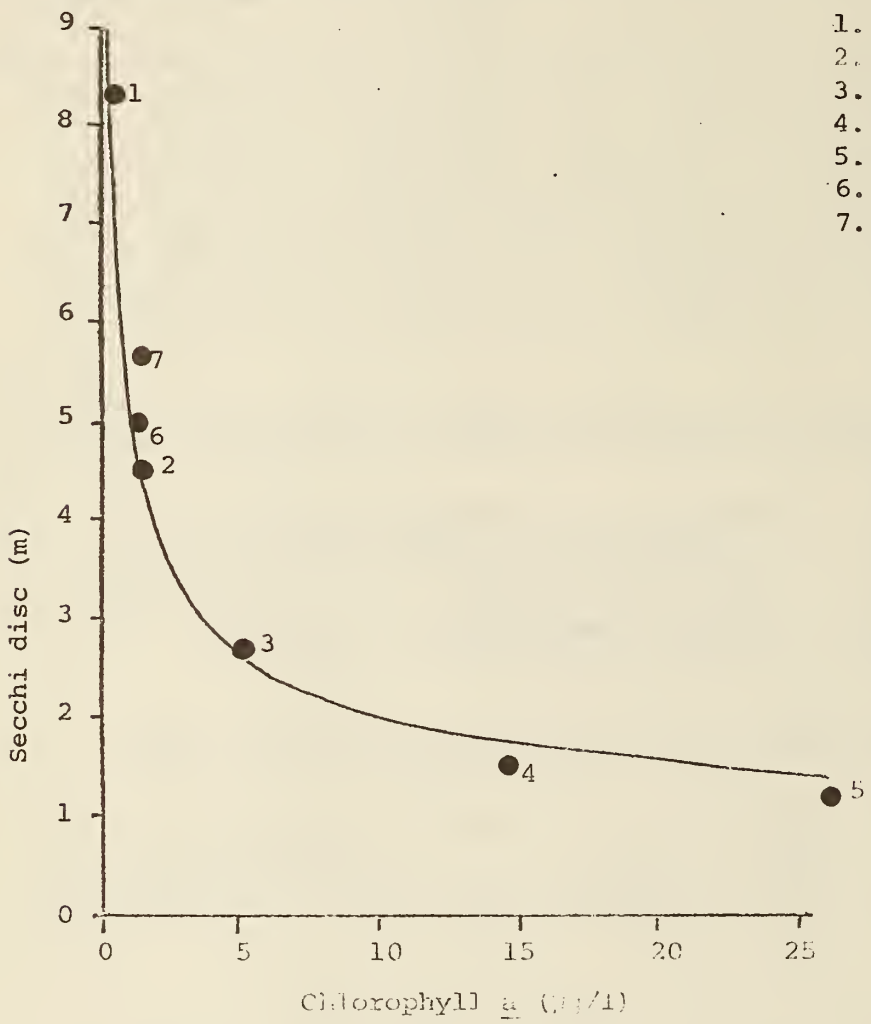
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Pine Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 1	5.8	1.5				
13	4.5	2.6				
20	4.8	2.7				
27	5.5	2.4				
Aug. 4	5.2	2.0				
10	6.7	1.3				
18	6.4	1.6				
24	6.4	2.2				
Sept.1	6.1	1.9				
7	5.2	1.2				
14	6.7	1.3				
28	5.5	1.4				
Mean	5.7	1.8				

Secchi disc readings for the period sampled ranged from 4.5 µg/l to 6.7 µg/l with the lowest values recorded in mid-July and the highest values in late August and early September (Table 1). The minor fluctuations in chlorophyll a concentrations generally corresponded with the Secchi disc values. Based on the seasonal averages for Secchi disc and chlorophyll a, Pine Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Pine Lake in 1974 and 1975.

Year	Station - Main S.D.	Station - Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
1971						
1972						
1973						
1974	5.0	1.5				
1975	5.7	1.8				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Pine Lake - 1974
7. Pine Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Pine Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

In the past two years there has been a slight increase in the mean Secchi disc reading, but no significant change in the mean chlorophyll a concentration. Continued sampling will be necessary to determine if the increased water clarity indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. P. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

Raven Lake

(Sherborne Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

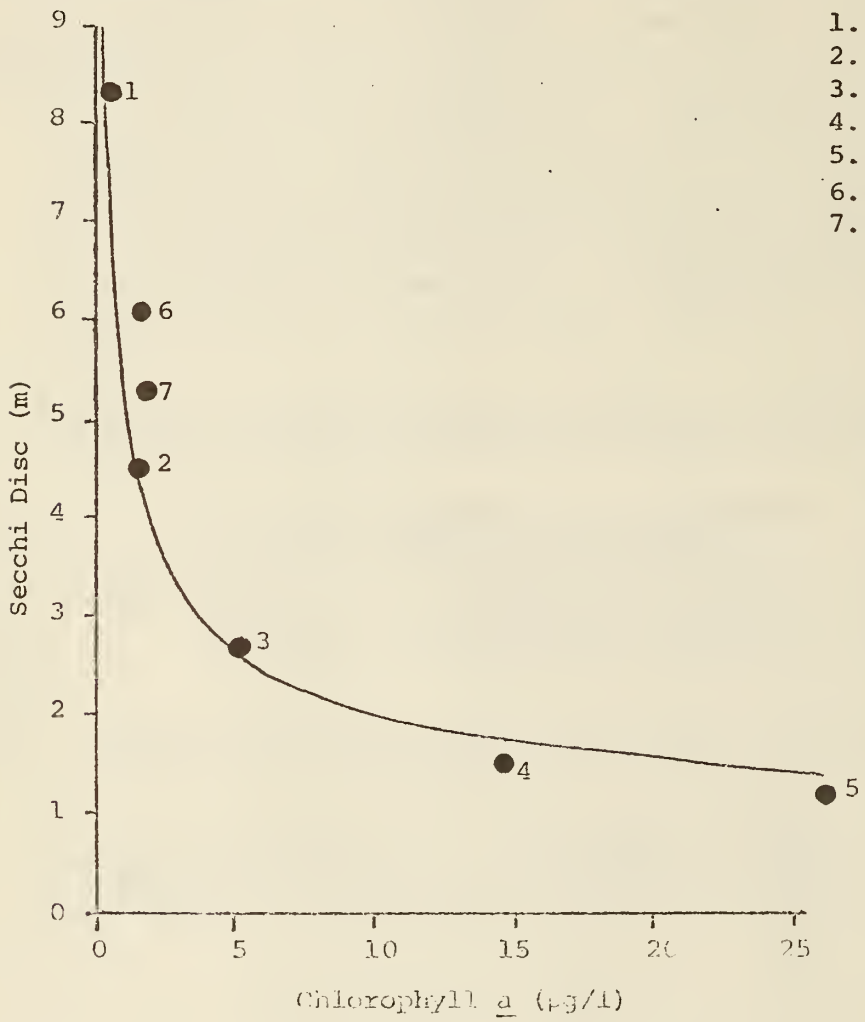
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Raven Lake in 1975.

Date	Station - Main		Station - Mary's Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	5.0	2.3	3.6	2.4		
June 8	5.8	1.8	5.5	1.6		
22	6.6	2.1	5.7	1.6		
30	5.9	2.3	5.0	2.6		
July 6	5.8	1.8	5.2	2.4		
13	5.8	1.6	5.3	2.1		
20	5.8	2.1	5.0	2.1		
24	6.4	2.0	5.7	1.6		
Aug. 4	6.7	1.5	5.9	1.4		
17	6.2	1.9	5.9	1.4		
Sept. 14	5.8	2.5	5.8	2.4		
21	6.2	2.7	5.3	4.2		
Oct. 5	6.2	1.7	5.5	2.3		
13	6.2	1.4	6.2	2.2		
26	7.7	1.3	5.5	2.3		
Nov. 15	5.8	1.4	3.6	2.1		

Secchi disc readings for the period sampled ranged from 5.0m to 7.7m at the Main Station and from 3.6m to 6.2m at the Mary's Bay Station, indicating slightly poorer water clarity in Mary's Bay (Table 1). Chlorophyll a concentrations were generally low at both stations; the highest value, 4.2 µg/l, was measured in Mary's Bay. Based on the seasonal averages for Secchi disc and chlorophyll a, Raven Lake would be considered unenriched, with relatively low algal densities in the main lake and moderately high algal densities in Mary's Bay.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Raven Lake in 1972 and 1975.

Year	Station - Main		Station - Mary's Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	6.1	1.9	5.3	2.2		
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Raven Lake (Main) - 1975
7. Raven Lake (Mary's Bay) - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Raven Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Raven Lake was positioned between moderately productive Kashagawigamog Lake and Kennisis Lake which is relatively unproductive (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for Raven Lake (Table 2), it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

RIPPLE LAKE

(Chaffey Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

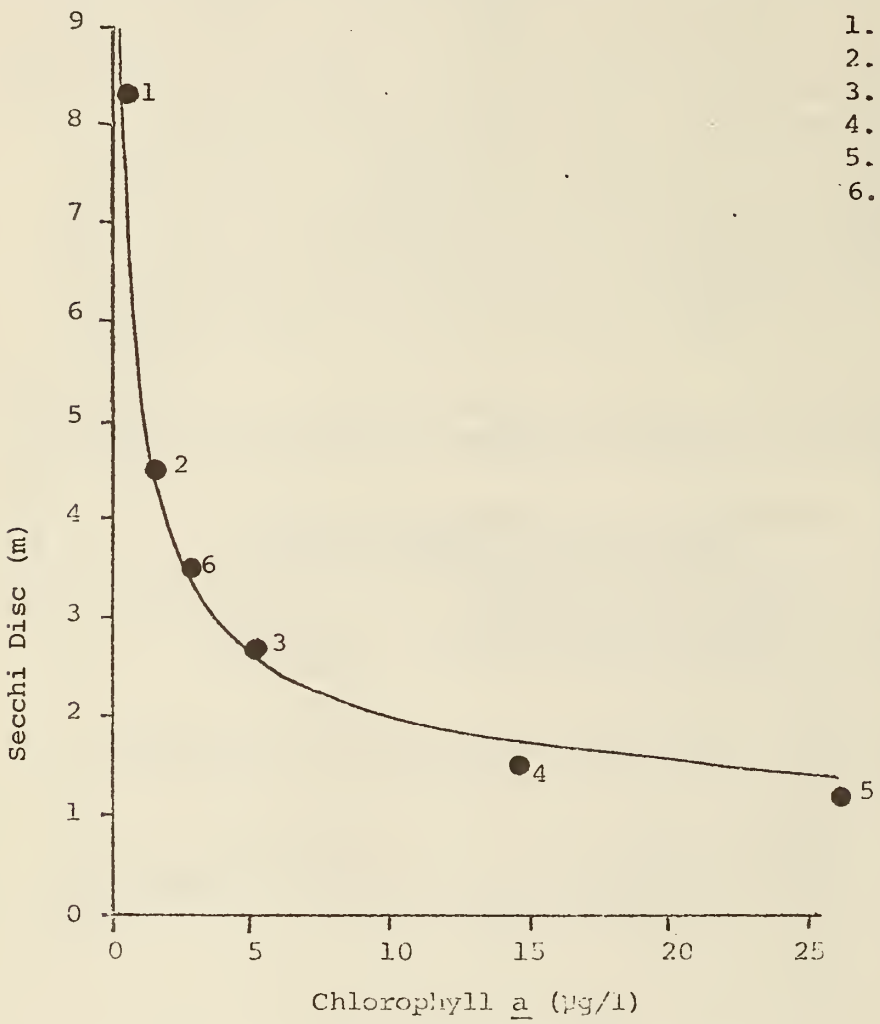
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Ripple Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 16	3.3	3.0				
July 13	3.8	-				
27	3.5	5.0				
Aug. 11	3.3	1.9				
24	4.3	3.6				
Sept. 9	2.8	2.3				
Mean	3.5	3.2				

Secchi disc readings for the period sampled ranged from 2.8 m to 4.3 m with the lowest value recorded in early September. Fluctuations in chlorophyll a concentrations did not necessarily correspond with the variations in Secchi disc values which were observed. The highest concentration, 5.0 µg/l, occurred in late July. Based on the seasonal averages for Secchi disc and chlorophyll a, Ripple Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Ripple Lake in 1975.

Year	Station - Main S.D.	Station - Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
1971						
1972						
1973						
1974						
1975	3.5	3.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Ripple Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Ripple Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Ripple Lake was positioned between moderately productive Kashagawigamog Lake and Gravenhurst Bay (Lake Muskoka) which is slightly more productive (Figure 1). Since no historical Secchi disc or chlorophyll a information is available for Ripple Lake (Table 2), it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal density.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Salerno Lake

(Snowdon & Glamorgan Twps., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Salerno Lake, 1975.

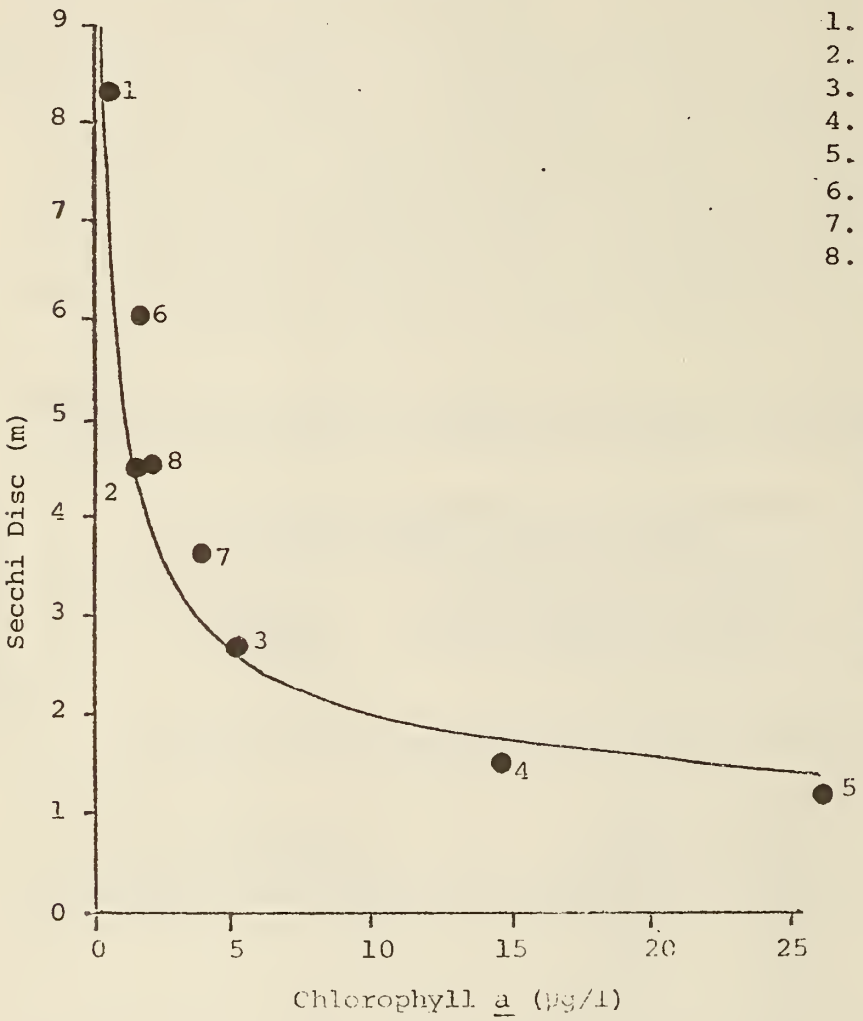
Date	Station - #1		Station - #2		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 20	3.0	3.1	4.5	1.3		
27	2.6	7.8	3.2	1.7		
Aug. 4	3.2	7.2	4.2	1.8		
10	3.9	4.5	6.4	2.2		
17	3.8	5.9	4.7	3.6		
24	4.5	2.6	5.2	1.1		
31	4.1	2.4	4.2	1.5		
Sept 28	3.3	1.6	4.4	2.5		
Oct. 5	3.8	2.5	4.2	3.0		
12	4.1	2.3	3.5	3.6		
Mean	3.6	4.0	4.5	2.2		

Secchi disc readings for the period sampled ranged from 2.6m to 4.5m at Station #1 and from 3.2m to 6.4m at Station #2, indicating slightly poorer water clarity at Station #1 (Table 1). Chlorophyll a concentrations were considerably higher at Station #1 than at Station #2. Based on the seasonal averages for Secchi disc and chlorophyll a, Salerno Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Salerno Lake in 1973 and 1975.

Year	Station - #1		Station - #2		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973*	6.0	1.9				
1974						
1975	3.6	4.0	4.5	2.2		
..						
..						
..						

*mean of three stations



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Salerno Lake * - 1973
7. Salerno Lake #1 - 1975
8. Salerno Lake #2 - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Salerno Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Salerno Lake Station #2 was positioned in close proximity to moderately productive Kashagawigamog Lake, whereas, Station #1 was positioned closer to Gravenhurst Bay (Lake Muskoka) - a more productive body of water (Figure 1). Both stations were considerably below the 1973 position. Since only limited historical Secchi disc and chlorophyll a information is available for Salerno Lake (Table 2), it is recommended that the sampling programme be continued to determine if the decreased water clarity and slight increase in algal densities indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

Schufelt Lake

(Township of Lake of Bays, Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

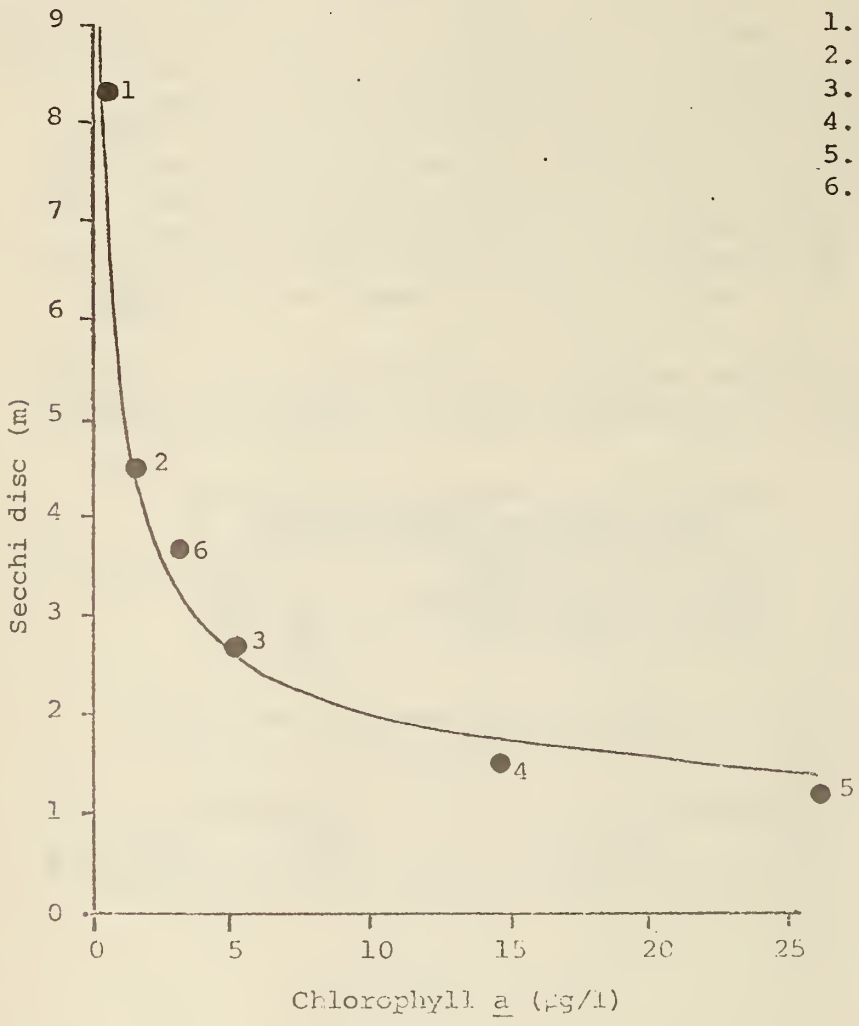
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Schufelt Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 24	4.0	1.4				
June 8	4.0	1.6				
15	4.0	1.4				
July 20	2.5	8.0				
27	-	5.5				
Aug. 4	4.0	1.5				
Mean	3.7	3.2				

In late May, June and early August, light penetrated to the bottom in the area sampled in Schufelt Lake, therefore, the Secchi disc could not be used to estimate water clarity. At the same time low chlorophyll a concentrations were measured. However, in July, higher chlorophyll a values as a result of higher algal densities were apparent and Secchi disc readings were considerably reduced. Using the system outlined above, although not entirely justified, Schufelt Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Schufelt Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	3.7	3.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Schufelt Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Schufelt Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Although the data is not exactly comparable, Schufelt Lake was included in Figure 1. Schufelt Lake was positioned in the middle section of the curve between moderately productive Kashagawigamog Lake and Gravenhurst Bay (Lake Muskoka) which is slightly more productive. Since no historical Secchi disc and chlorophyll a information is available for Schufelt Lake (Table 2), it is recommended that the sampling programme be continued to determine if any trends are developing with regard to water clarity or algal densities, particularly during July and possibly in the early fall.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

SOYERS LAKE

(Minden Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

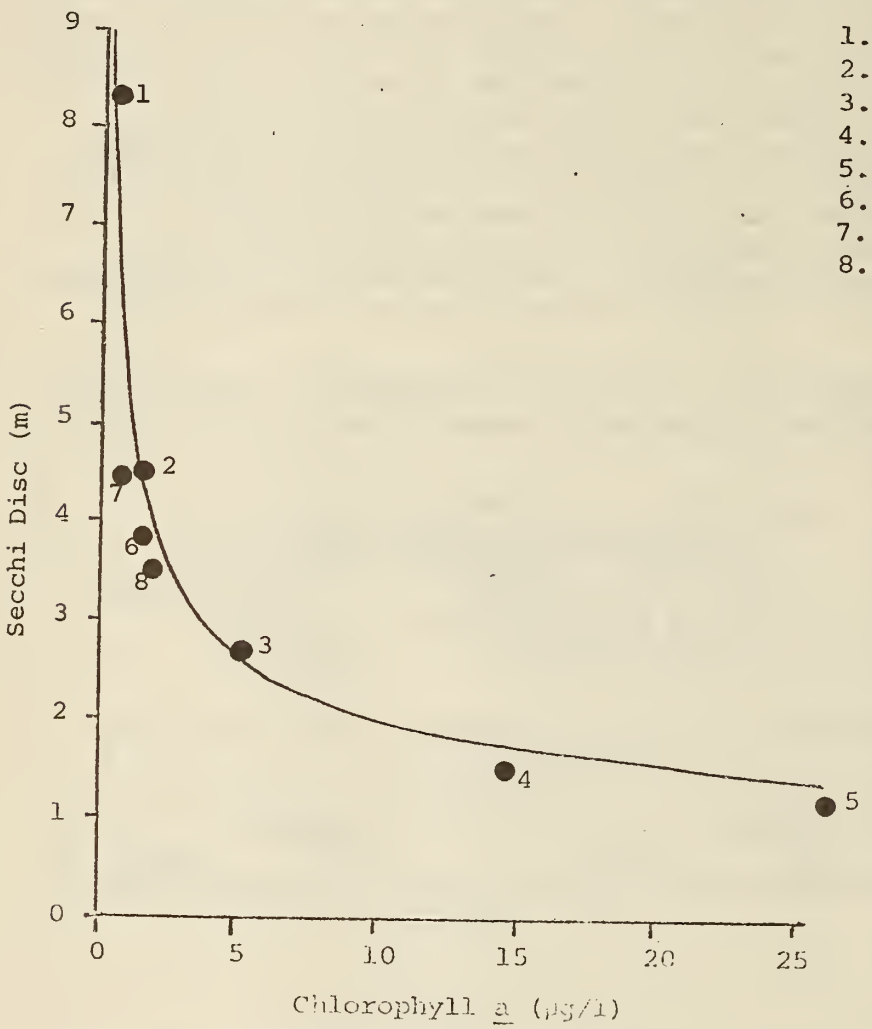
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Soyers Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 22	2.9	1.3				
July 20	2.9	3.2				
Aug. 4	3.9	2.1				
17	3.8	2.8				
31	3.5	1.2				
Sept.14	3.9	1.8				
Mean	3.5	2.1				

Secchi disc readings for the period sampled ranged from 2.9 m to 3.9 m with the lowest values recorded in June and July. Chlorophyll a concentrations did not fluctuate significantly, the maximum concentrations measured occurred in late July and early August. Based on the seasonal averages for Secchi disc and chlorophyll a, Soyers Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Soyers Lake from 1973 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973	3.8	1.7				
1974	4.4	0.9				
1975	3.5	2.1				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Soyers Lake - 1973
7. Soyers Lake - 1974
8. Soyers Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Soyers Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past three years there have been only minor fluctuations in mean Secchi disc and chlorophyll a values. However, the lowest mean Secchi disc reading and the highest mean chlorophyll a concentration were calculated for 1975; therefore it is recommended that sampling be continued to determine if the 1975 results indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

STORMY LAKE

(Glamorgan Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

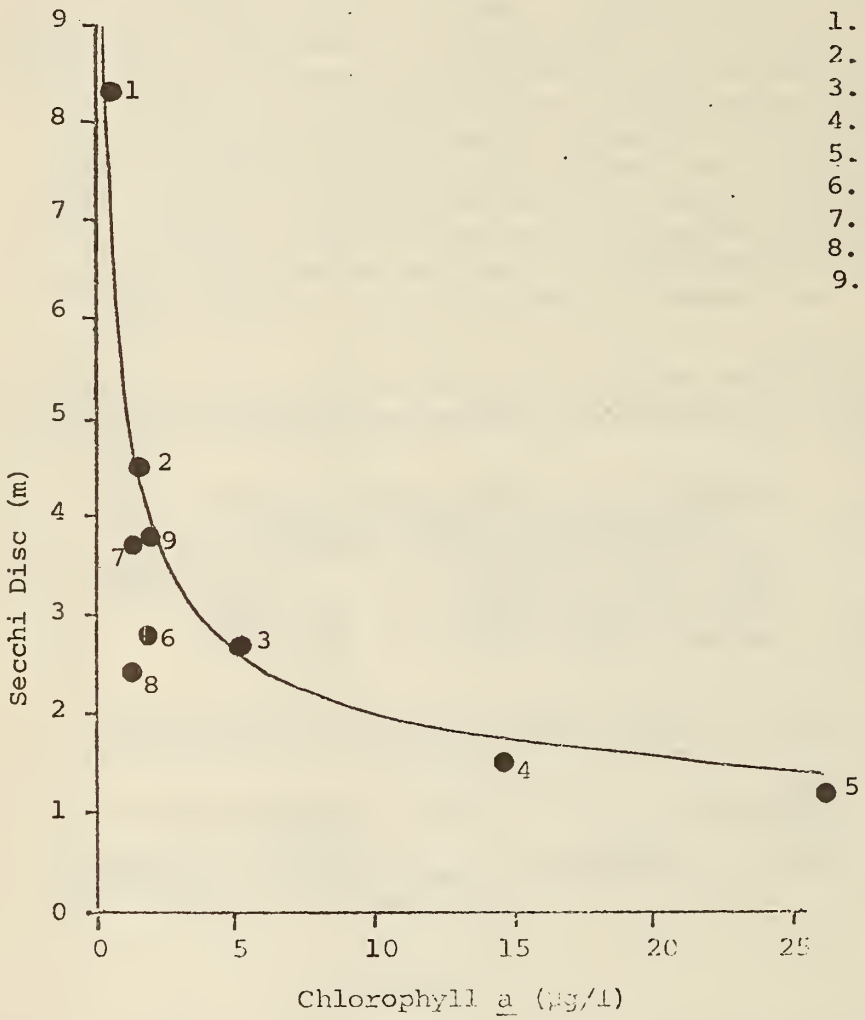
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Stormy Lake in 1975.

Date	Station - Main S.D.	Station - Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
May 18	3.6	1.3				
June 1	3.6	2.9				
30	3.6	1.7				
July 13	4.2	1.8				
Aug. 4	3.9	3.6				
17	4.2	3.4				
Sept. 1	3.6	0.9				
Mean	3.8	2.2				

Secchi disc readings for the period sampled were relatively uniform, ranging from 3.6 m to 4.2 (Table 1). Chlorophyll a concentrations were highest in early June and early August. Based on the seasonal averages for Secchi disc and chlorophyll a, Stormy Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Stormy Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	2.8	1.9				
1973	3.7	1.6				
1974	2.4	1.4				
1975	3.8	2.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Stormy Lake - 1972
7. Stormy Lake - 1973
8. Stormy Lake - 1974
9. Stormy Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Stormy Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past four years there have been no significant changes in mean Secchi disc readings or mean chlorophyll a concentrations (Table 2, Figure 1). This would indicate a relatively stable lake condition from a water clarity and algal density standpoint.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Attn: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. C. Robinson.

Ontario

Ministry of the Environment

THREE MILE LAKE

(Watt Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Three Mile Lake in 1975.

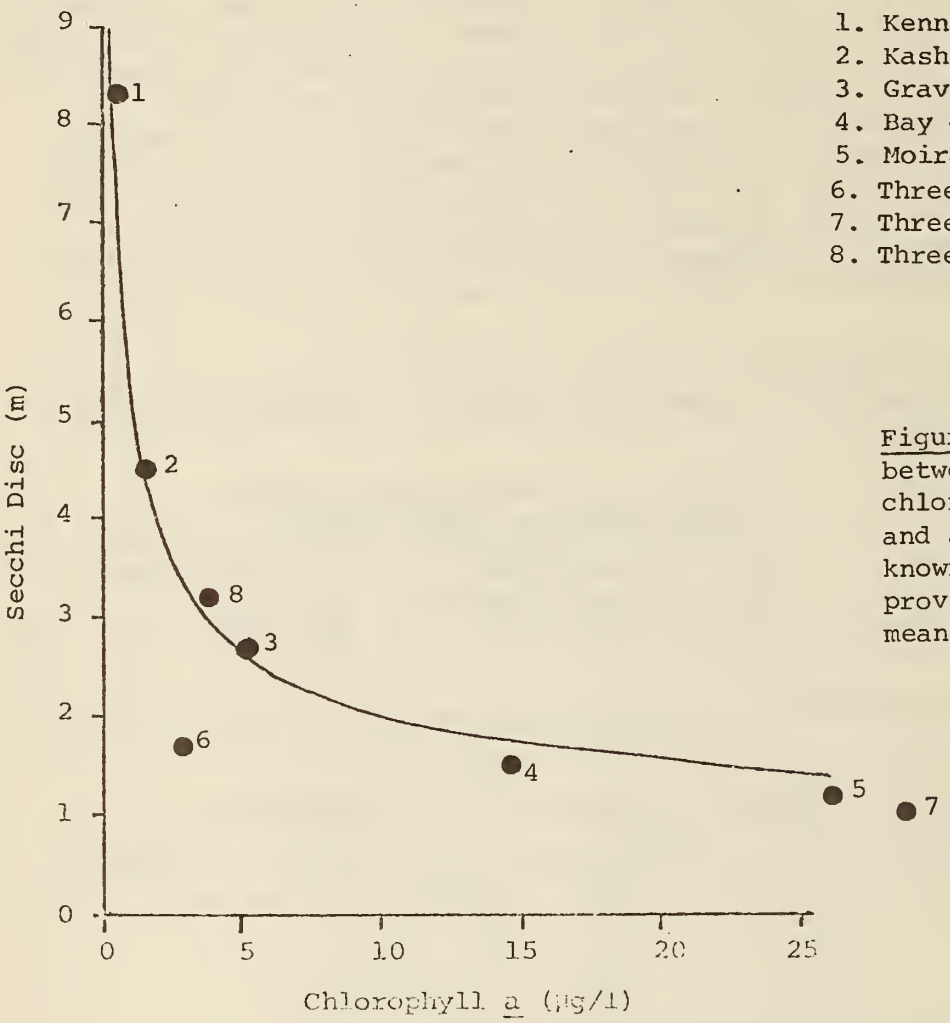
Date	Station - Main		Station - Hammel Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 8	1.5	7.5	3.3	2.9		
15	1.5	6.0	3.5	3.2		
22	1.5	4.6	2.8	4.5		
30	1.8	6.1	3.8	4.0		
July 6	1.3	8.6	3.8	2.6		
13	1.0	9.5	3.5	1.8		
27	0.5	47.0	3.3	2.4		
Aug. 4	0.8	61.0	3.5	3.4		
11	0.5	63.0	2.5	5.3		
24	0.5	75.0	2.0	10.0		
Mean	1.1	28.8	3.2	4.0		

A considerable difference in water clarity and algal densities existed between the main lake station and the Hammel Bay station. Secchi disc readings for the period sampled ranged from 0.5m to 1.8m in the main lake and from 2.0m to 3.8m in Hammel Bay, indicating much poorer water clarity in the main lake (Table 1). Chlorophyll a concentrations fluctuated over extremely wide ranges at both stations (main lake - 4.6 µg/l to 75 µg/l, Hammel Bay - 1.8 µg/l to 10.0 µg/l), and correlated well with the Secchi disc values. Based on the seasonal averages for Secchi disc and chlorophyll a, the main lake would be considered enriched, with very high algal densities; whereas Hammel Bay would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Three Mile Lake in 1972 and 1975.

Year	Station - Main		Station - Hammel Bay		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972*	1.7	3.0				
1973						
1974						
1975	1.1	28.8	3.2	4.0		
..						
..						
..						

*mean of three stations



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Three Mile Lake - 1972*
7. Three Mile Lake (Main) - 1975
8. Three Mile Lake (Hammel Bay) - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Three Mile Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

The 1972 results in Table 2 do not compare well with the 1975 data since the averaging of three stations tends to de-emphasize the extreme differences between the main lake and Hammel Bay. In Figure 1 the main lake was positioned to the right of Moira Lake - a very highly productive lake in southeastern Ontario. It is recommended that the sampling be continued and extended into the fall to determine if algal densities are normally this high and also the duration of the peak period.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Attn: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

TROOPER LAKE

(Glamorgan Twp. Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Trooper Lake in 1975.

Date	Station - Main S.D.	Station - Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
June 8	1.3	3.3				
July 27	0.6	120.0				
Aug. 10	0.8	6.7				
17	1.5	21.0				
24	1.5	11.0				
Sept. 1	1.5	8.2				
Mean	1.2	28.4				

Secchi disc readings for the period sampled ranged from 0.6m to 1.5m with the lowest values recorded in late July and early August (Table 1). Chlorophyll a concentrations fluctuated over an extremely wide range (3.3 µg/l to 120.0 µg/l) and were generally high from the end of July until early September when sampling was terminated. The very high concentration measured in July may represent a large algal bloom existing near the lake bottom or could be the result of bottom sediments being disturbed during sampling. Based on the seasonal averages for Secchi disc and chlorophyll a, Trooper Lake would be considered enriched, with very high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Trooper Lake in 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974						
1975	1.2	28.4				
..						
..						
..						

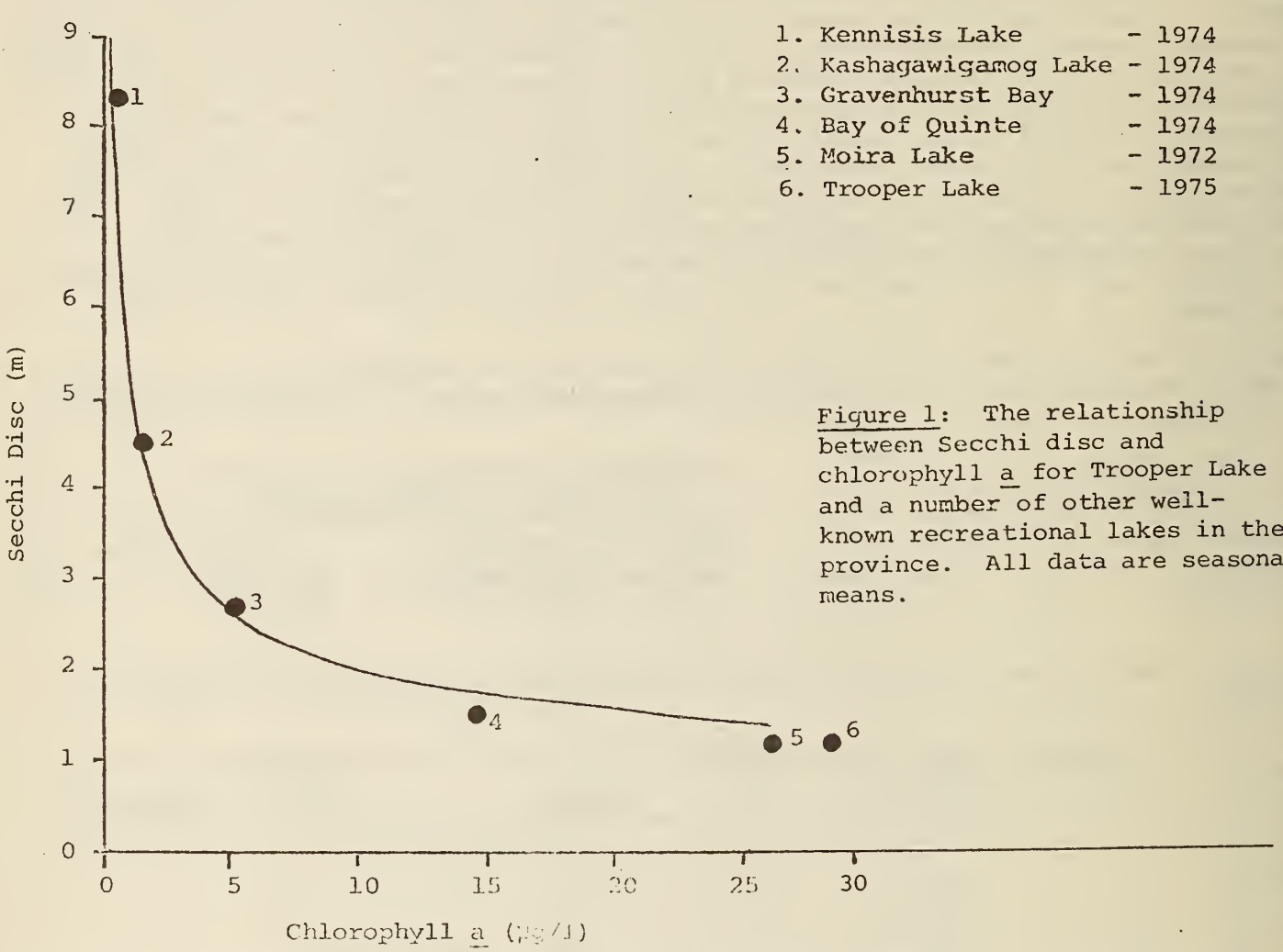


Figure 1: The relationship between Secchi disc and chlorophyll a for Trooper Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

In Figure 1, Trooper Lake was positioned to the right of Moira Lake - a very highly productive lake in southeastern Ontario. Since no historical information is available for Trooper Lake, it is recommended that the sampling programme be continued to determine if algal densities are normally as high as observed.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

Twelve Mile Lake

(Minden Twp., Haliburton County)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

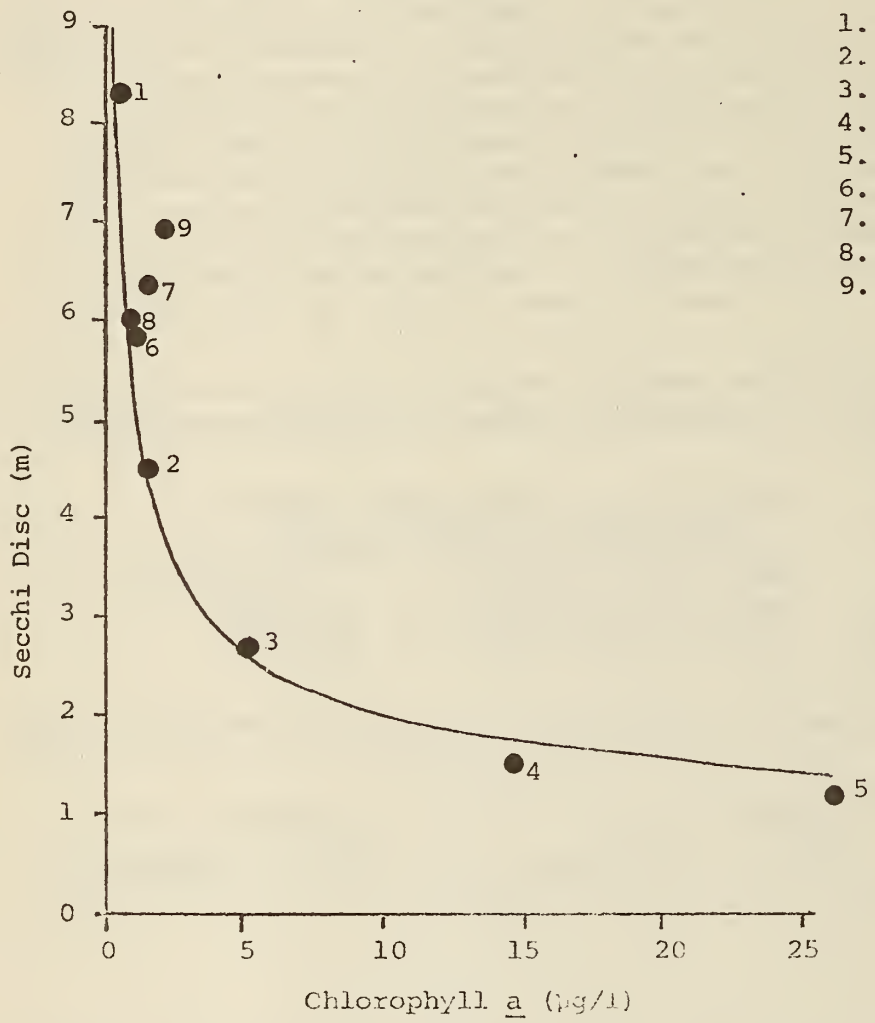
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Twelve Mile Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 19	5.6	2.2				
June 15	6.7	3.0				
22	8.3	-				
July 1	6.5	2.1				
6	7.1	3.3				
13	6.2	3.2				
20	7.0	2.7				
27	6.2	1.3				
Aug. 4	7.7	5.6				
10	7.1	2.3				
17	6.7	2.0				
Sept. 1	7.4	1.4				
14	7.3	1.0				
Mean	6.9	2.5				

Secchi disc readings for the period sampled ranged from 5.6 m to 8.3 m with the lowest value recorded in May (Table 1). Chlorophyll a concentrations fluctuated from week to week (range 1.0 µg/l to 5.6 µg/l) and did not correlate well with the Secchi disc values. Based on the seasonal averages for Secchi disc and chlorophyll a, Twelve Mile Lake would be considered unenriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Twelve Mile Lake from 1972 to 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972	5.8	1.2				
1973	6.3	1.8				
1974	6.0	1.0				
1975	6.9	2.5				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Twelve Mile Lake - 1972
7. Twelve Mile Lake - 1973
8. Twelve Mile Lake - 1974
9. Twelve Mile Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Twelve Mile Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

During the years 1972 to 1974 there were no significant changes in mean Secchi disc readings or chlorophyll a concentrations; however, in 1975 the highest mean values were recorded. Continued sampling will be necessary to determine if these higher values indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000
Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058
Mr. G. Robinson.

Ontario

Ministry of the Environment

Lake Vernon

(Stisted & Chaffey Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Lake Vernon in 1975.

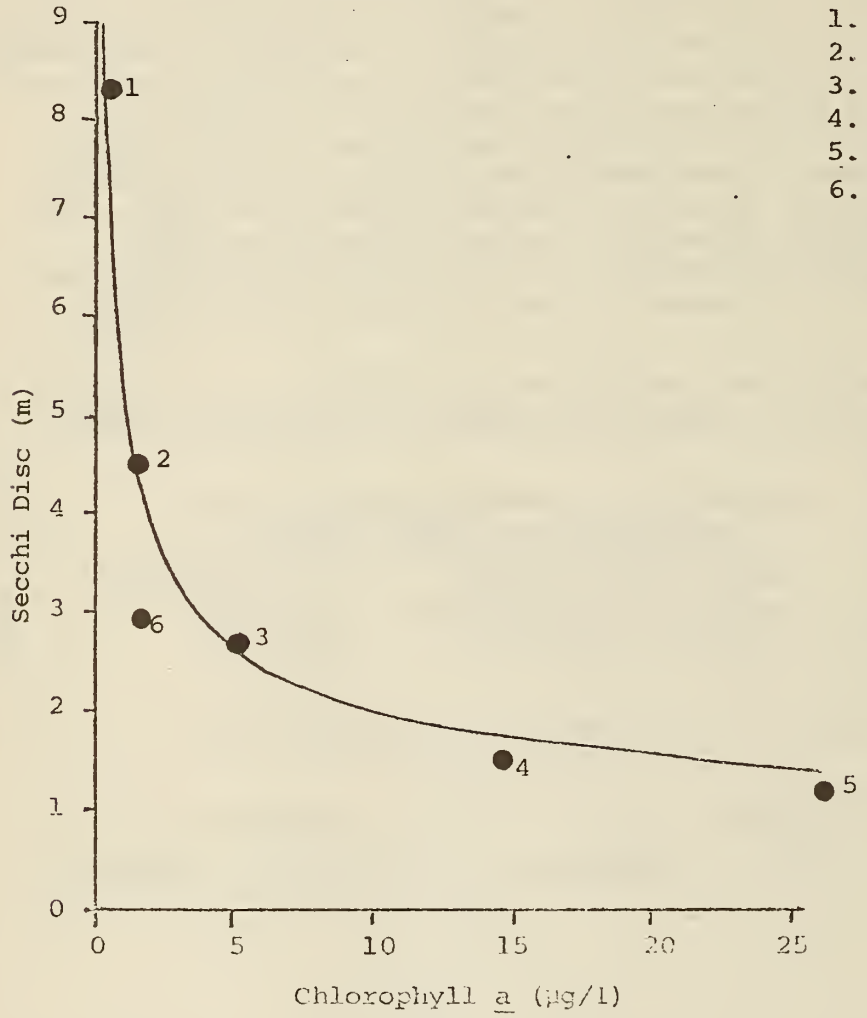
Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
July 6	3.0	2.7				
13	2.8	1.4				
Aug. 4	2.9	1.4				
Mean	2.9	1.8				

Since samples were collected on only three occasions in 1975 it is difficult to obtain even a reasonably accurate estimate of the trophic status of Lake Vernon. Secchi disc readings did not vary significantly during the period sampled (Table 1). The highest chlorophyll a concentration (2.7 µg/l) was obtained on July 6. Based on the average Secchi disc and chlorophyll a values which are available, Lake Vernon would be considered enriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Lake Vernon in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974 *	4.0	0.7				
1975	2.9	1.8				
..						
..						
..						

*based on one set of data only (Aug. 28)



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Lake Vernon - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake Vernon and a number of other well-known recreational lakes in the province. All data are seasonal means.

Lake Vernon was positioned between moderately productive Kashagawigamog Lake and Gravenhurst Bay (Lake Muskoka) - a more productive body of water (Figure 1). Since only limited historical Secchi disc and chlorophyll a information is available for Lake Vernon (Table 2), it is recommended that the sampling programme be continued.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3P3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

WALKER LAKE

(Township of Lake of Bays, Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

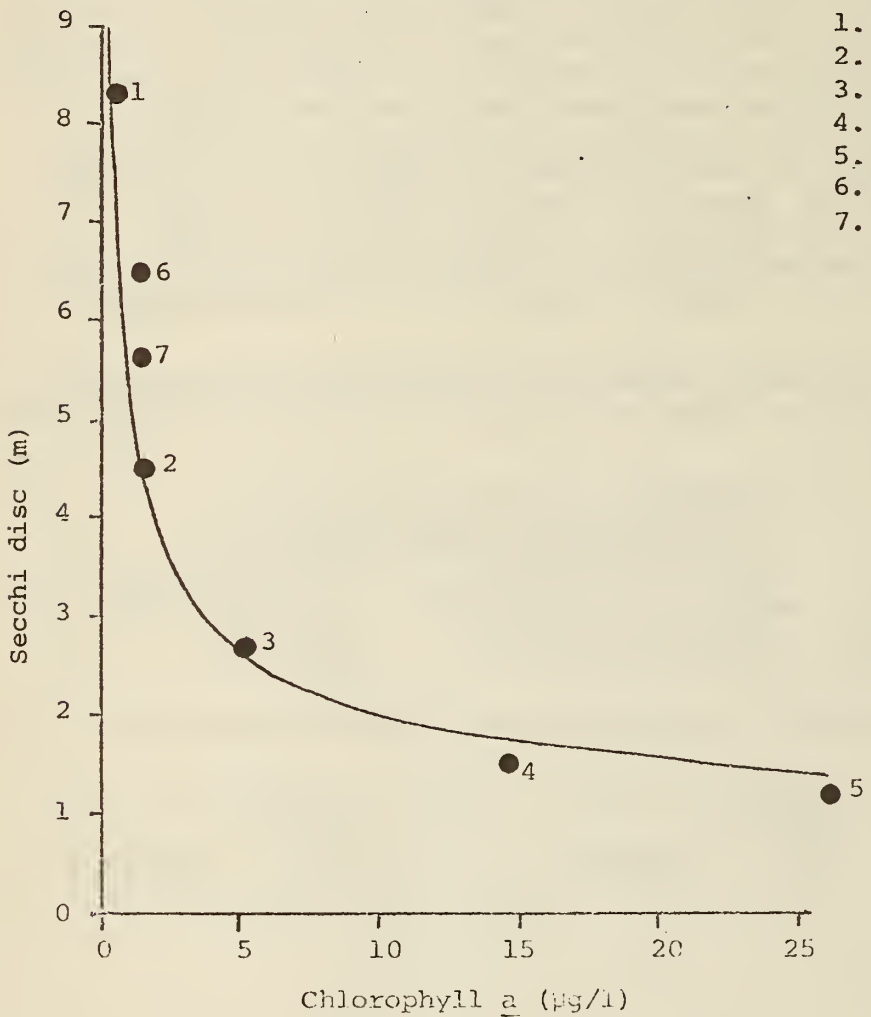
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Walker Lake in 1975.

Date	Station - Main S.D.	Chloro. a	Station - S.D.	Chloro. a	Station - S.D.	Chloro. a
June 29	4.8	1.3				
July 13	6.3	1.0				
Aug. 4	6.3	2.6				
24	4.3	0.8				
Sept. 7	6.5	2.3				
Mean	5.6	1.6				

Secchi disc readings for the period sampled ranged from 4.3 m to 6.5 m with the lowest values recorded in late June and late August (Table 1). Chlorophyll a concentrations were generally low (range 0.8 µg/l to 2.6 µg/l). The highest chlorophyll a concentrations did not correlate well with the lowest Secchi disc readings. Based on the seasonal averages for Secchi disc and chlorophyll a, Walker Lake would be considered unenriched, with relatively low algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Walker Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	6.4	1.6				
1975	5.6	1.6				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Walker Lake - 1974
7. Walker Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Walker Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Over the past two years there has been a slight decrease in mean Secchi disc readings, but no change in the mean chlorophyll a concentration (Table 2, Figure 1). Continued sampling will be necessary to determine if this decrease in water clarity indicates a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3E3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. C. Robinson.

Ontario

Ministry of the Environment

Waseosa Lake

(Chaffey Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

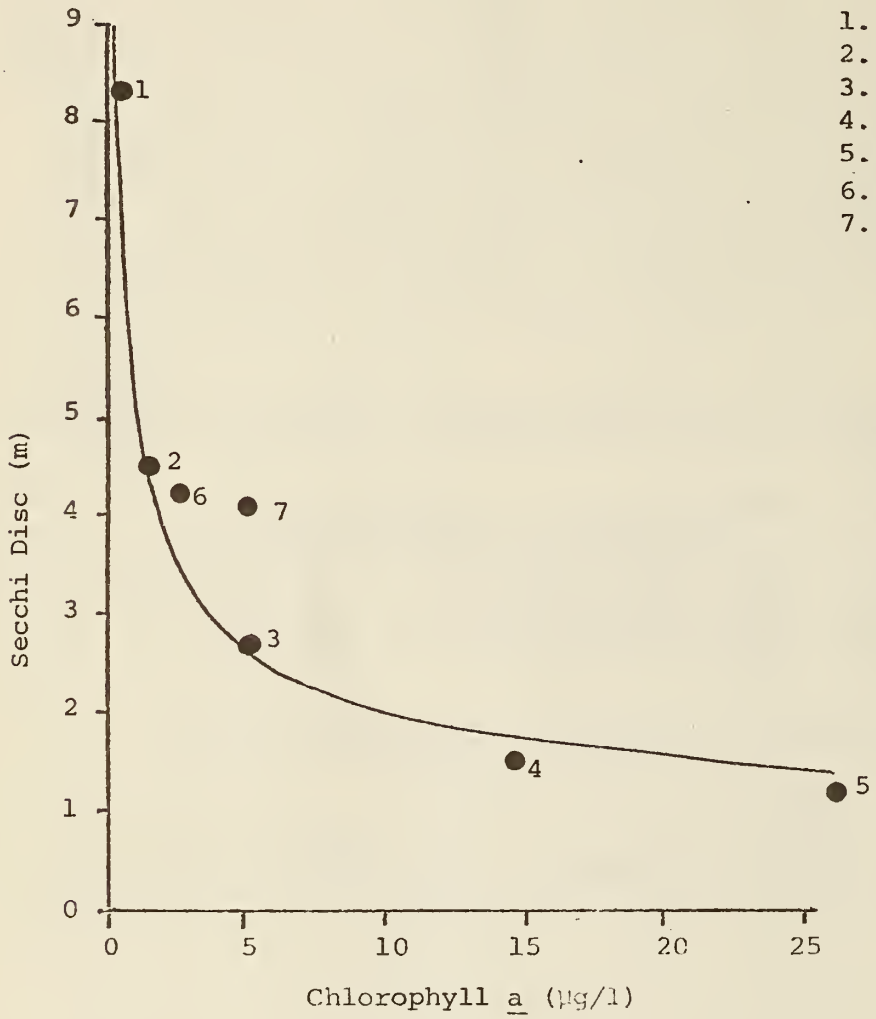
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Waseosa Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
June 16	2.8	2.4				
July 1	3.8	12.0				
13	3.8	6.0				
28	5.3	3.8				
Aug. 10	4.8	5.7				
24	4.3	3.6				
Sept. 22	3.8	3.0				
Mean	4.1	5.2				

Secchi disc readings for the period sampled ranged from 2.8m to 5.3m with the lowest value recorded in mid-June (Table 1). Chlorophyll a concentrations fluctuated over a relatively wide range (2.4 µg/l to 12.0 µg/l) and did not correlate well with the Secchi disc values. Based on the seasonal averages for Secchi disc and chlorophyll a, Waseosa Lake would be considered moderately enriched, with relatively high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Waseosa Lake in 1974 and 1975.

Year	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
1971						
1972						
1973						
1974	4.2	2.8				
1975	4.1	5.2				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Waseosa Lake - 1974
7. Waseosa Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Waseosa Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Waseosa Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Over the past two years there have been no significant changes in mean Secchi disc readings, however, mean chlorophyll a concentrations have almost doubled (Table 2). Continued sampling will be necessary to determine if these higher algal densities in 1975 indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

Ontario

Ministry of the Environment

WOOD LAKE

(Oakley Twp., Regional Municipality of Muskoka)

SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAMME - 1975

It has been observed that the enrichment status of a lake can be estimated relatively easily and inexpensively by using a Secchi disc and chlorophyll a (the green pigment in algae) concentrations to give an indication of water clarity and algal density, respectively. (A more detailed explanation is provided in a publication entitled "Information of General Interest to Cottagers" which may be obtained from the addresses listed below). The "Self-Help Programme" was introduced in 1971 in response to requests from concerned cottagers to conduct surveys on many recreational lakes throughout the province. Volunteers are supplied with sampling kits, including a Secchi disc, a water sampler, bottles and instructions and are asked to take Secchi disc readings and collect water samples weekly, or as often as possible, during the ice-free period of the year. The water samples are shipped to the nearest Ministry of the Environment laboratory facilities where they are analyzed for chlorophyll a. The true value of the programme is only realized if it is continued for a number of years in order to define long-term trends.

Based on experience, mean annual Secchi disc readings and chlorophyll a concentrations in uncoloured lakes have been grouped into approximate ranges to indicate the status of enrichment.

Secchi disc (S.D.) (meters - m)		Chlorophyll a concentration (Chloro. a) (micrograms per liter - µg/l)	
enriched	0-3 m	high algal densities	4 µg/l or more
moderately enriched	3-5 m	moderate algal densities	2-4 µg/l
unenriched	5 m or more	low algal densities	0-2 µg/l

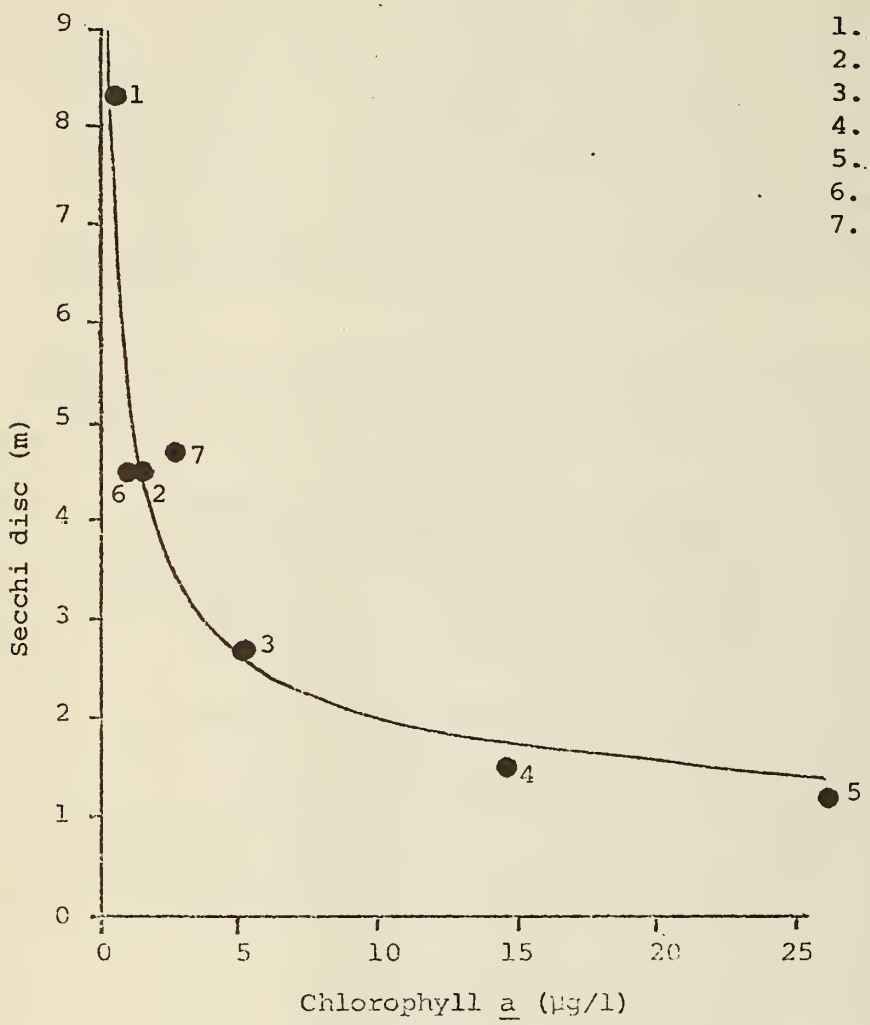
Table 1: Secchi disc (m) and chlorophyll a (µg/l) data collected from Wood Lake in 1975.

Date	Station - Main		Station -		Station -	
	S.D.	Chloro. a	S.D.	Chloro. a	S.D.	Chloro. a
May 18	4.5	1.6				
July 2	4.0	3.2				
21	5.0	4.6				
25	4.5	3.8				
Aug.13	5.0	2.1				
22	5.0	1.9				
Mean	4.7	2.9				

Secchi disc readings for the period sampled did not vary significantly from week to week, ranging from 4.5 m to 5.0 m (Table 1). Chlorophyll a concentrations gradually increased from 1.6 µg/l in mid-May to a maximum of 3.8 µg/l in late July, and then decreased to 1.9 µg/l in late August. Based on the seasonal averages for Secchi disc and chlorophyll a, Wood Lake would be considered moderately enriched, with moderately high algal densities.

Table 2: Summary of mean values for Secchi disc (m) and chlorophyll a (µg/l) data collected from Wood Lake in 1974 and 1975.

Year	Station - Main S.D.	Station - Main Chloro. a	Station - S.D.	Station - Chloro. a	Station - S.D.	Station - Chloro. a
1971						
1972						
1973						
1974	4.5	1.3				
1975	4.7	2.9				
..						
..						
..						



1. Kennisis Lake - 1974
2. Kashagawigamog Lake - 1974
3. Gravenhurst Bay - 1974
4. Bay of Quinte - 1974
5. Moira Lake - 1972
6. Wood Lake - 1974
7. Wood Lake - 1975

Figure 1: The relationship between Secchi disc and chlorophyll a for Wood Lake and a number of other well-known recreational lakes in the province. All data are seasonal means.

Wood Lake was positioned in close proximity to Kashagawigamog Lake - a moderately productive lake in the Haliburton Highlands area (Figure 1). Over the past two years there have been no significant changes in mean Secchi disc readings; however, mean chlorophyll a concentrations have more than doubled (Table 2). Continued sampling will be necessary to determine if these higher algal densities in 1975 indicate a trend.

For additional copies of this report, please contact:

Ontario Ministry of the Environment,
Central Region,
150 Ferrand Drive,
Don Mills, Ontario,
M3C 3C3.

416-424-3000

Att'n: Mr. R. Shaw.

or

Ontario Ministry of the Environment,
Water Resources Branch,
Box 213,
Rexdale, Ontario,
M9W 5L1.

416-248-3058

Mr. G. Robinson.

OCT 0 1 1976

TD427.5/S43/1975/MOE
Ontario. Ministry of the Environment.

Secchi disc-chlorophyll a self-help programme - 1975.

AROP

DATE	ISSUED TO
June 25	Printing
	Y. Hamdy 1-4.
OCT - 8 1976	
OCT 15	

TD/427.5/S43/1975/MOE
Ontario Ministry of the En
Secchi disc -
chlorophyll a self arop
c.1 a aa

Environment Ontario
Laboratory Library
125 Resources Rd.
Etobicoke, Ontario M9P 3V6
Canada